

disk

USER



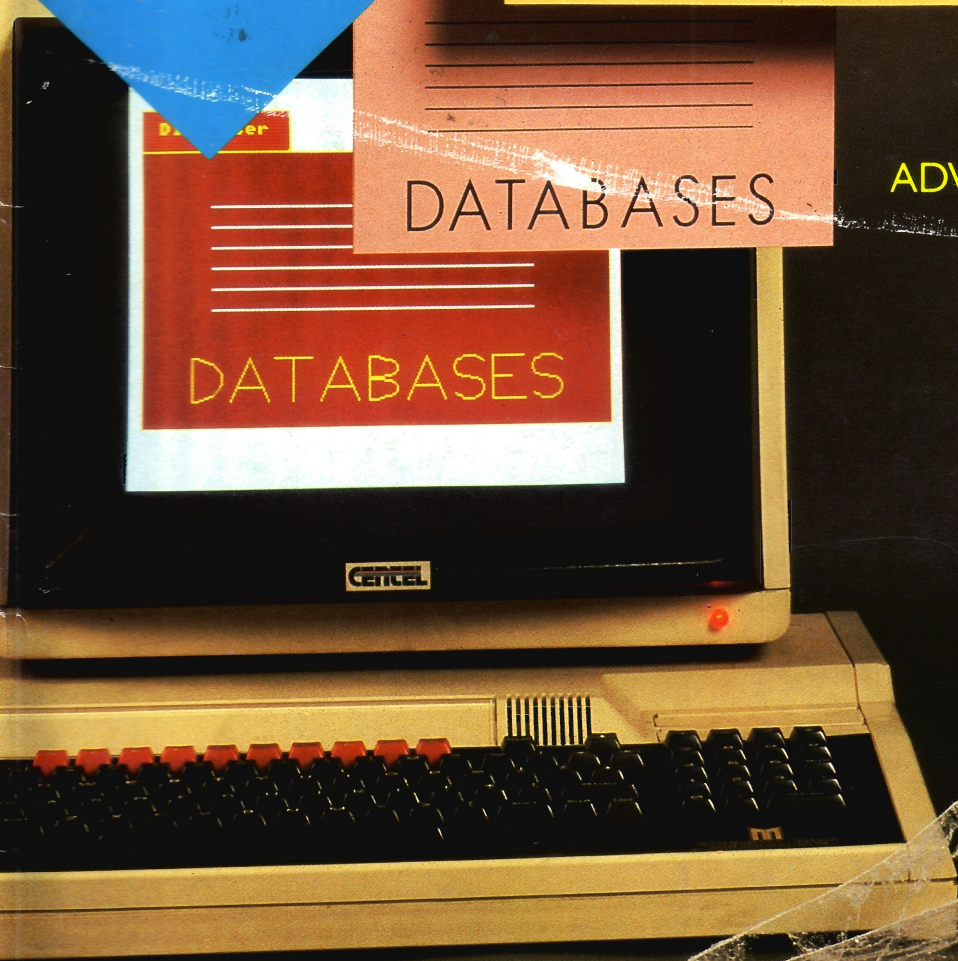
**BBC MICRO
MODEL B
MODEL B+
MASTER I28**

**ALL DFS
FILING
SYSTEMS**

BURSTING WITH GOOD IDEAS FOR YOUR BBC

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ECOSOFT — LIFE
EXTENDED DISK EDITOR
AUTOBASIC
EXPERT SYSTEMS
DATABASE GUIDE
HYPERDRIVER DEMO**

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NEWS, REVIEWS, DISCUSSION**



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use your disk system effectively.

In the 1987 Magazine Publishing Awards organised by The Publisher, Disk User for the BBC Micro won a second place certificate. The experienced panel of judges praised the "sheer value of the cover-mounted disk that formed part of the new publication's concept".

SUBSCRIBING MADE EASY JUST TURN TO PAGE 25 . . .

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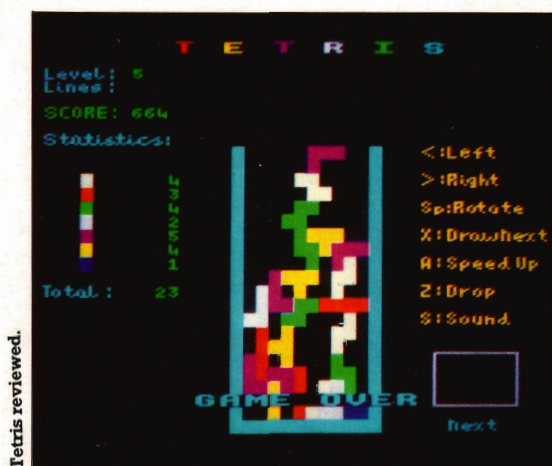
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disk USER

Number Eight
June 1988

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IN THE MAGAZINE

Disk Instructions

How to get the best out of Disk User – including 40 to 80 track conversion. Make sure you get the full picture by reading these pages before using your Disk User disk

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Latest releases and news for disk users

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Your letters column

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The ultimate cheat program. A monster list of extra lives and extended play time

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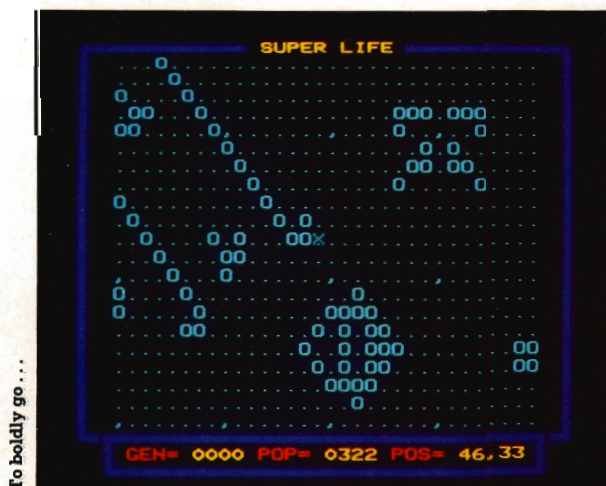
AutoBASIC 33

Call up any BASIC program from a star command.

ELECTRON COMPATIBLE:

TRACER DATABASE NLQ PRINTER DRIVER EXTENDED DISK EDITOR BLOBBER CONVERSION AUTOBASIC

Disk User is supplied on a 40 track disk format and can be run without conversion on a 40 track drive.
If you have 40/80 switchable drives then make sure the drive is switched to the 40 option.
For 80 track only drive owners, a conversion program is provided – see Disk Instructions
Most files can be copied to and used on ADFS systems



DISK INSTRUCTION

To get the best from your copy of *Disk User*, please carefully read the instructions below. We have made *Disk User* able to run on a very wide range of systems.

CATALOGUE

More innovation this month from *Disk User*. Tracer, this month's database, is accompanied by its own pullout user guide in the centre pages of the magazine. All you have to do is loosen the staples, give a firm tug and you've got a ready-made guide to sit by the computer.

And you'll be getting a lot of use out of Tracer. We have provided a complete on-screen "help" file this month but in forthcoming issues there will be examples of historical databases, a Dewey classification

database for libraries, public or personal, a *Disk User* bibliography and many more. If you have an idea for a database why not send it in and we'll commission one. And if you create a useful database of your own, send it in to share with other readers and earn some cash in the process!

Finally we would like to make it clear that the program in the April issue entitled Pixel Perfect was not connected in any way to Pixel Perfect by AVP Computing. AVP's Pixel Perfect is a full desk top publishing program, details of which are available from AVP Computing, School Hill Centre, Chepstow, Gwent NP6 5PH. ☎ 02912 5439.

All Users

Please make a **Backup copy**

and keep the original in a safe place with a Write-Protect tab on. You should use this copy as your working copy, as many of the programs need to write to the disk, and doing this will diminish the usefulness of the original, and may not be possible anyway due to the 31 file limit imposed by many DFSs.

New Users

If you are a new user

Don't Panic!

First find out whether you have 40 or 80 track drive(s) attached to your computer (ask someone knowledgeable if you don't know). Then go to your User guide or Welcome Manual and read the chapter on filing systems. In particular find out how to

use the *COPY command. Next re-read the section above

All Users,

and then go to the appropriate section dealing with your particular filing system and follow the instructions listed there.

Advanced Users

You do not need help to run *Disk User*, but do refer to the instructions for the filing system you are using, and **Don't forget to make a Backup copy.**

Electron Users

Note that the Mode 7 animation, with which *Disk User* begins, does not work on your machine. To start up *Disk User* for your machine you should type CHAIN "DUMENU". To start up automatically with SHIFT and BREAK (booting the disk) follow

these instructions (ONLY on a back-up of the disk):

*ACCESS !BOOT

*BUILD !BOOT

CHAIN "DUMENU"

Press ESCAPE

Read startup instructions again.

ADFS Users

Files that work without change on the ADFS system this month are:

Life NLQ printer Anchor demo Auto-basic Collectors Items

40 Track Drive Systems

Disk User is supplied on a 40 track disk so will work on any 40 track BBC Micro system (at least, any that we know of!) straight away. Remember to make a working copy before use.

80 Track Drives

Because *Disk User* is supplied as a 40 track disk, 80 track disk drives have to double-step through the disk. Probably the most convenient thing to do is to copy *Disk User* on to 80 track format. This can be done in two ways.

If your filing system allows double-stepping, we recommend using the system's own command. As a general rule, built-in 40-to-80 track converters should be used where available; the documentation for your filing system or utility ROM will give full instructions, and we give suggestions for some better-known systems further on.

Not all filing systems have facilities for double-stepping; Acorn's DFS is one such system. To overcome this,

Disk User is published monthly on the third Friday of the month preceding cover date. Advertising enquiries to *Disk User*, Number One Golden Square, London W1R 3AB. ☎ 01 437 0626.

Editorial enquiries to *Disk User*, 6C Belgic Square, Peterborough, Cambridgeshire. ☎ 0733 53355. Contributions should include full source code and instructions file on disk. Payments are extremely competitive.

Distributed by SM Distribution Ltd., 16-18 Trinity Gardens, London SW9 8DX.

☎ 01 274 8611.

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Publications Ltd.

Typesetting and artwork by Island

Graphics, Chesham

Cover design and design by the ASP

Design Studio

Colour by Croxons, Chesham

Printed by Chase Web, Devon

Duplication by DisCopy Labs, 20 Osyth

Close, Brackmills, Northampton, NN4 0DY

ISSN 0953-0606

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a program called CHANGE is supplied on the *Disk User* disk in a section which can be accessed by 80 track drives.

Using CHANGE

Insert *Disk User* into an 80-track drive (or 40/80 switched to 80-track) and type:

***CHANGE**

<RETURN>

The program will prompt you to insert a pre-formatted blank 80 track disk when it is ready to write to it (you will have to swap back and forward between the two disks several times if you are using only one drive). Once this is completed, you can use the newly created 80-track version of *Disk User* and keep the original as the back-up.

Our suggestions on how to use *Disk User* on some popular DFSs now follow.

Master 128

This Acorn DFS has a software double stepping mode for a 80 track drive. Set it with the command

***DRIVE 0 40**

<RETURN> and then hit <BREAK>

Disk User will then work without any need for conversion. However this may not allow writing to the disk in 40 track mode; in any case, you should make a working copy, so copy to a 80 track disk.

DFS on Master Compact

The DFS is supplied as an image on some versions of the Master Compact Welcome disk (or is available from Acorn on disk) and this may be used in conjunction with a 5¼ inch 40 track disk drive to run Disk User. Please note that we **cannot** at present supply *Disk User* on a 3½ inch disk (if there is sufficient demand, we may be able to in the future).

Opus DDOS/Challenger 3

If you are using the Opus DDOS disk filing system or Challenger 1.0/DDOS then issue the command

***4080 AUTO**

<RETURN>

or

***ENABLE 40/80**

<RETURN>

and Disk User will work without any need for conversion.

Challenger 3

If you have the later ROM version Challenger 1.1 then issue the command

***OPT 8,1**

<RETURN>

to achieve the same result. Disk User will work effectively from the RAM disk. Use

***COPY 0 4 * * * CONFIG 4=0**

0=4 * OPT 4 3

to run from RAM disk

Solidisk DFS

With the Solidisk DFS 2.1 and 2.0 you can set a software double stepping mode for a 80 track drive with the command

***ENABLE 80**

<RETURN>

Disk User will then work without any need for conversion.

Watford DFS

The Watford DFSs also have a software double stepping mode for an 80 track drive. Consult your manual for the appropriate FX call or command. Disk User will then work without any need for conversion.

Disk failure

If for any reason your copy of Disk User will not work on your system

then please carefully re-read the instructions given above.

If you still experience problems then:

1. If you are a subscriber, return it to:

INFONET LTD, 5 River Park Estate, Berkhamsted, Herts HP4 1HL.

2. If you bought it from a news-agents, return it to

Disk User Replacements (BBC), Diskopy Labs, 20 Osyth Close, Brack Mills, Northampton NN4 0DY.

Please use appropriate packaging, cardboard stiffener at least, when returning a disk. Do not send back your copy of the magazine. Only the disk please.

Editorial/Technical Enquiries

You can make telephone enquiries about *Disk User* on Wednesday and Thursday afternoons on 0733 53355 (please ask for *Disk User* Editorial). Enquiries in writing to the following address:

Disk User, 6C Belgic Square, Off Padholme Road, Peterborough PE1 1XF.

Disk User JUNE '88

All change – 40 track to 80 track convertor.

Files:-

CHANGE – Machine code file.

To use type ***RUN CHANGE**
<RETURN>

Disk User – Disk magazine title page animation (yes we know it goes in backwards!).

Author: Abbas Files:-

P.RUNDISC – BASIC program

A.DISC – Machine code file

Disk Menu – Easy selection of the software.

Author: Matthew Fifield Files:-

DUMENU – BASIC program

Subscriptions Form – Easy way to subscribe.

Author – Matthew Fifield Files:-

SCREEN – Data file

SUBSCR – BASIC program

Theme Music – Groovey tune to get you in the mood.

Author: Ian Waugh Files:-

LOADER – BASIC program

Theme – Data file

Tracer – Database with multiple file search and easy text entry.

Author: Clive Woodings Files:-

EXPAND – BASIC program

TRACER – Compressed files

TRACELD – BASIC program

Superlife – Ultrafast version of a classic game brought right up to date.

Author: Nathan Williams Files:-

LIFE – BASIC program

CODE – Machine code file

Anchor Demonstration – The ultimate SWR utility.

Author: Frank Wessels Files:-

ANCHDEM – BASIC program

FIGALL – Compressed Mode 7 screens

NLQ Printer Driver Demo – give your printer a taste of Hyperdriver.

Author: Robin Burton Files:-

NLQprn – Protected BASIC program

NLQINPT – Text file

Extended Disk Editor – Copy this program to a fresh disk before use.

Author: Neil Craven Files:-

EDISK – Machine Code file

Blobber to Electron convertor – Play Blobber on an Electron.

Author: D Ingleby-oddy Files:-

BTOE – BASIC Program

Animations Menu – Easy access to the A-Z of animations. This month we reach the letter I.

Author: Abbas Files:-

I.MENU – Data file

P.MENU – BASIC program

Autobasic – *RUN BASIC programs

Author: Neil Craven Files:-

AUTOBAS – BASIC/Assembly language program

Easy pokes – Helps you install your own pokes in games.

Author: Mark Gidley Files:-

FLOPLST – BASIC/Assembly language program.

Note:- Disk User 8 almost fills a 40 track disk. Any software that may need extra disk space to save information must be copied onto a blank disk ie Tracer, Life and Autobasic.

DISK NEWS

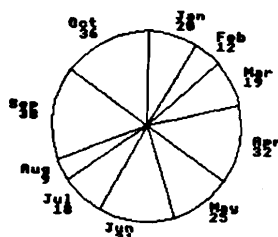
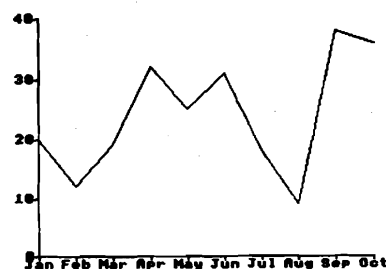
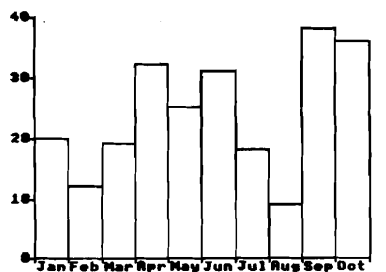
Laser fonts

Datathorn Systems have launched a catalogue of "soft" fonts for the Epson GQ3500 laser printer. The fonts are downloaded from disk into the memory of the printer (RAM) as opposed to adding permanent font cards (ROM) in the two slots available. Up to eight fonts can usually reside in the printer, over and above any font cards.

The software downloading program and first font costs £25.00 with subsequent fonts £7.50 each, up to eight on the disk (excluding VAT). Datathorn also supply a forms design program which utilises the line drawing capabilities of the printer.

Datathorn Systems Ltd, George House, 50 Spring Grove, Loughton, Essex, IG10 4QD.
☎ 01 508 4904.

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ



Datathorn fonts and dumps from Interchart.

Write for Disk User

Disk user is constantly on the lookout for original and well written articles and software for publication.

We are especially interested in disk utilities and interactive tutorial style programs. Graphics and music specialists may also appreciate the ability of Disk User to deliver their programs to a large and appreciative audience.

All submitted material must be in machine readable form. This applies both to programs (in any language) and to documentation, which should be prepared with a BBC Micro wordprocessor. 5.25" disk or 3.5" (DFS 40/80, ADFS large/small) equally acceptable. Please also include hardcopy and any suitable illustration, photographs and/or screen dumps.

All submissions will be acknowledged and material returned if not required. On acceptance the copyright in such works which will pass to Argus Specialist Publications Limited will be paid for at competitive rates. All work for consideration should be sent to the editor at **Disk User, 6C Belgic Square, Off Padholme Road, Peterborough PE1 1XF.**

Typing Tutor

Turbo Typing Tutor is a new piece of software programmed by Russell Jackson and Mike Mindell. The typing tutor costs £7.99. Russell Jackson also runs a 24 hour bulletin board with Acorn technical advice and software to download.

R.A. Jackson, (The Vdu Enterprises), c/o Armourseal, Brent House, 24/28 Friern Park, Finchley, London N12 9DA.
☎ 01 906 2018.

Think it out

Fernleaf Software have released a disk (40 or 80) based set of logical thinking and reasoning games for the 7 to 11 age range. The five programs included are Stairways, Lytbacks, Colour Path, Stop Them and Howlong. Two games are designed for use by one player or group and three games are designed for two players or groups. Price £19.95 inclusive.

Fernleaf, 31 Old Road West, Gravesend, Kent DA11 0LH
☎ 0474 359037

Learning at home

LCL have introduced a series of multi-media learning packages under the Home College title. Video, computer software tutorial, books and tapes combine to teach O and A level and up to degree level if required. Naturally the BBC Micro is one of the supported microcomputers.

Full details on ☎ 0491 579345.

Viewdata design

Design 7 Plus, Vufax and Masterfax are the trio of titles offered by MB Software for anyone who wants to use the multitude of Mode 7 screens available, including those downloaded from Morley's Teletext Adapter.

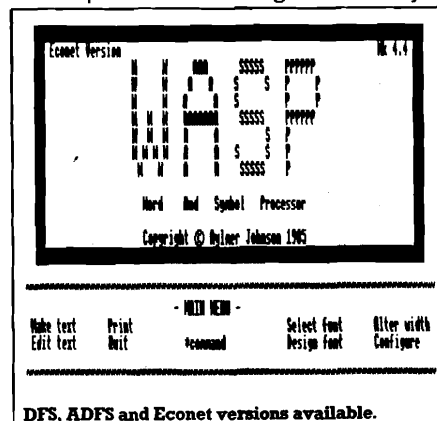
Design 7 Plus is a Mode 7 editor with wordprocessing style features, such as search and replace style codes, automatic box and frame drawing, cut and paste via disk, moving and copying marked sections of screen. Prices from an economical £8.95.

Masterfax employs sideways RAM as a datastore, allowing up to 148 pages. Price is £39.95. A complete Vufax setup with Morley RAM disk as storage costs £245.

MB Software, 4 Arden Close, Hadrian Park, Wallsend, Tyne & Wear, NE28 9YB. ☎ 091 26344026

WASP wp

A new wordprocessing package, developed at Cambridge University's



Department of Engineering, is available from the National Extension College. Called WASP (Word and Symbol Processor), the software features super and subscripting, advanced page-break logic, emboldening and underlining. WASP can also handle mathematical material and foreign languages.

WASP works on all BBC Micros and Econet. Price £19.95.

**Customer Services Department,
National Extension College, 18
Brooklands Avenue, Cambridge
CB2 2HN. ☎ 0223 316644.**

Mary Rose

Cambridgeshire Software House's

latest project is now ready and this most resourceful of educational software houses has taken a leaf out of the arcade companies' book with a 'tie-in' product. *Mary Rose - The Anatomy of a Tudor Warship 1510 - 1988* has been produced in conjunction with the Mary Rose Trust. The game involves the players trying to recover for themselves many of the artefacts found on the Mary Rose by Margaret Rule and her team of Marine Archaeologists.

Included in the package is a pack put together by the Mary Rose Trust including colour slides, a book of 'finds' and a copy of the Cowdry Print. The complete package is ideal

for home use as well as for schools. Prices: £24.50 Model B and Master 128, £28.00 Master Compact (excluding VAT).

**Cambridgeshire Software House,
The Town Hall, St.Ives,
Huntingdon, Cambs, PE17 4AL.
☎ 0480 66805.**

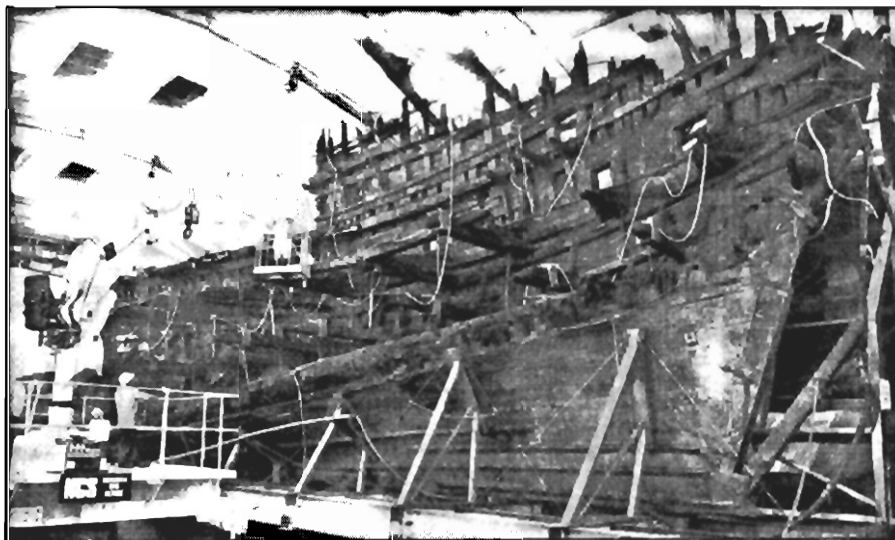
Espana Viva

BBC Software have supported the Espana Viva language course familiar to viewers of the Sunday morning television series. BBC language courses are truly multi-media these days with television, radio, cassette tape, books and software all playing a part.

The Espana Viva software is well designed and easy to use, the packaging attractive and the booklet neatly created on a Macintosh DTP setup. All the vocabulary and phrases needed on holiday and quite a bit beyond are here, including map reading, supermarket shopping and mystery identity games. There are 30 programs in all.

So if Espana is your favoured holiday retreat or you plan to expand your business into this bit of southern Europe, check out this course. The software, with its patient prompting and revision sequences, will prove a unique and very helpful part of the language learning process.

**BBC Enterprises, 80 Wood Lane,
London W12 0TT.**



Cambridgeshire Software House's celebration of the Mary Rose.



¡Espana Viva!

- A 1.1 WHOSIT**
- B 1.2 BLANKIT**
- C 2.1 ANAGRAM**
- D 2.2 TREE**
- E 3.1 BANDIT**

- F 3.2 SCRAMBL**
- G 4.1 WHERE**
- H 4.2 NEWTOWN**
- I 5.1 MARKET**
- J 5.2 IDENTITY**

Type **P** to PROCEED

C to CHANGE your selection

BBC Soft supporting Hispanophiles.

DISCUSSION



Automatic Disk Cataloguer Utility

I would like some assistance in respect of the Automatic Disk Cataloguer Utility. In Disk User Number One it says that the variable record% set at line 460 can be changed. I have listed the program, but no line 460. I presume line 460 is in A.ALPHA M/code section. Being a relative newcomer to computing I am unable to list the M/code section. Can you please help?. You might be interested to know that I am 70 years of age and took up computing very recently when I realised I should do something to stimulate the brain.

G Tyas Kent

Well your brain shows every sign of being in good fettle, as you have spotted that the Automatic Disk Cataloguer utility does not correspond exactly to its description in the accompanying article. In fact the program on the disk has been compacted. This has quite a profound effect on the structure of the program. variables are compacted to one letter, single statement lines are joined together, and REM statements, are taken out. In this case line 460 no longer exists, as it has been added onto line 450, and the variable record% has been changed into h%. Therefore to change the maximum number of records you need to change the second statement on line 450, h%=200 to h%=30.

Sticky Situation

It was good news to read that you intend to publish Disk User on a monthly basis from now on. But I feel I had to write to you and ask you to please! please! find another method of fixing the disk envelope to the magazine. The horrible sticky tape you use has so far defaced five out of my six copies purchased so far. I know this sounds fussy but I like to keep all my computer mags in A1 condition.

D.Clements Middlesex

Sorry to hear about your mutilated Disk User mags, have you tried soaking them in fairy liquid before removing the disk (just joking). Seriously though this is a problem which is always faced by magazines with items stuck to their covers. If you use too strong a glue, then the mag gets torn when the item is

Our monthly chat around the disk drive

removed. If on the other hand the glue is too weak, then light fingered types find it all too easy to spirit away your disk, and the newsagent is left with a pile of unsaleable material. We reckon we've got it just about right. Here's a tip, use one of those very sharp modelling knives to cut the disk away just at the join. You will probably end up with a strip of sellotape still attached to the magazine, but at least it will be a clean cut, and look a lot more sightly than a great big tear.

Lincomp won't

I buy your disk/magazine every issue and continue to be impressed with the standard of each article. I must say however there is too much of an emphasis on games. Because of my work I do not have much free time and so I am still only exploring Disk User Number Three (Oct/Nov 87). I have come across a problem with the line compacter program, and have a number of questions concerning it: Firstly am I right to assume that file SHRINKab is the assembler for the line compacter program. Secondly how do I make it generate the machine code. I have tried CHAINing SHRINKab, and I have even tried changing the Disk User menu program so that it loads and runs the SHRINKab program in the same way as the SHRINKaa. this did not work either. I also noticed that when SHRINKaa is run it loads SHRINKab, but I do not know what it does with it. Perhaps I am missing some very vital instructions.

K Simpson Lewisham

I am sure there are a lot of people like you out there who don't have much time for leisure Mr Simpson, so I am sure some of them are experiencing similar problems. I would recommend you slow down a bit and actually go back to booting up the disk and following the menu instructions. You will find Line Compacter on page 2 option 2 of the menu. This program loads and runs the BASIC program LINCOMA, which produces the machine code for lincomp. At this point you are prompted for a file name:

*SAVE <name> 7000 75F5

Enter LINCOMP, and use the cursor and COPY keys to copy the load and run addresses above. You will now have the correct file to use with SHRINK. The two files SHRINKaa, and SHRINKab are in fact just parts one and two of the assembly language source code for SHRINK, and should be kept together.

Spock Menu Addendum

Anyone encountering problems using the *Spock*, logical disk menu published in the February/March edition of Disk User, read on.

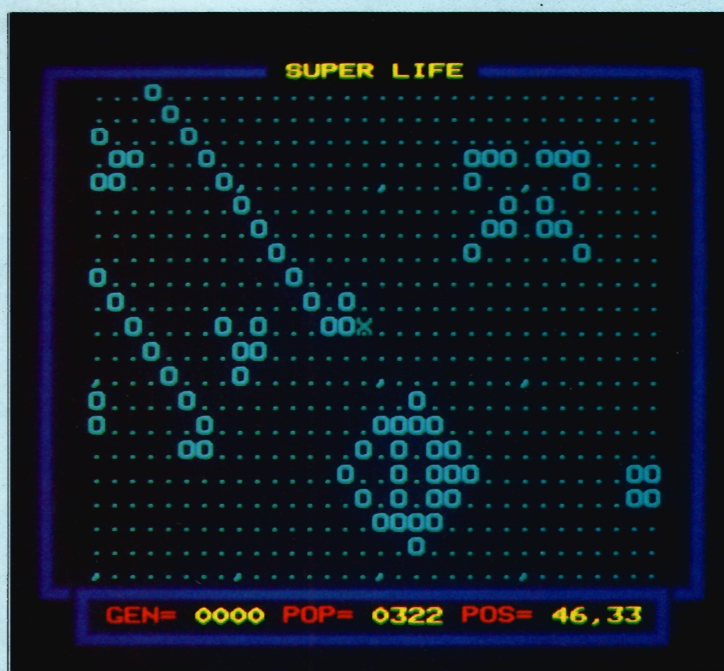
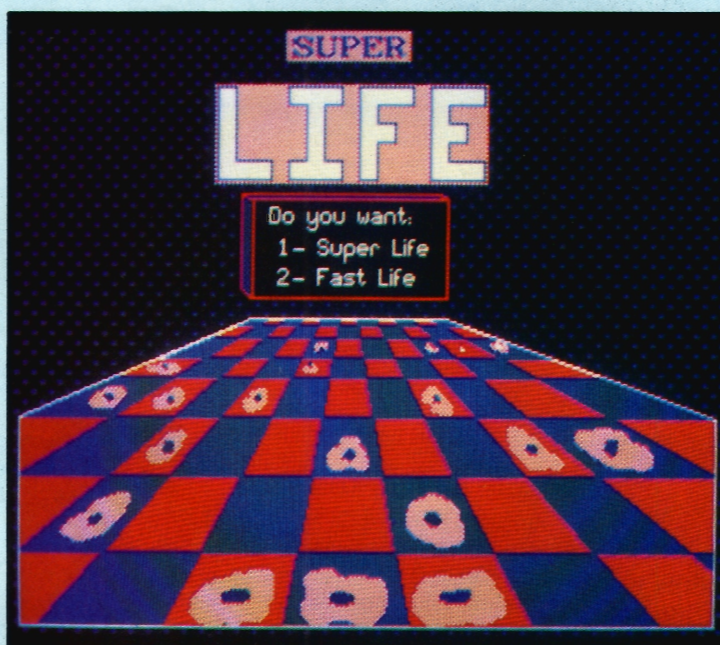
Because the Spock Menu we supplied was configured to use drive two as well as drive zero, the menu comes up with an error message if used with a single sided disk.

To allow the Spock Menu to work on a single sided disk just carry out the following straightforward changes to a backup copy of the program:

```
LOAD "SPOCK"
LIST
Delete FORdrive%=0TO2STEP2
Replace with drive%=0
Delete NEXT
LIST
Delete FORdrive%=0TO2STEP2
Replace with drive%=0
LIST 190
Delete NEXTdrive%
SAVE "SPOCK"
Lines 150, 160 and 190 will then look like this:
150DEFPROCcat:drive%=0:
  PROCoscli("DRIVE "+STR$(
    (drive%)):title$(drive%/2)="":K%
    =&1000000:Y%=X%DIV256:
    X%!1=S%:A%=5:CALL&FFD1:
```


ECOSOFT LIFE

Superlife is a fast moving version of a classic educational game



Superlife has two screen modes: lo-res and hi-res. In lo-res the screen may be scrolled with the cursor keys while in hi-res mode the whole universe is visible. In lo-res mode there is also a cursor represented by a flashing X which is moved about with

:ZX/

<RETURN> places a cell at the cursor and <SPACE> clears it.

<TAB> advances the universe by one generation. In life mode <SHIFT> allows you to freeze the action.

The other options are controlled with the function keys:

f0: This will at any time return you to normal lo-res edit mode. **f1:** This will animate the screen. **f2:** This will change the screen to hi-res mode. If you are already in hi-res life mode then it will return you to hi-res edit mode. **f3:** This returns the screen and cursor to the exact centre. Obviously this only works in lo-res edit mode. **f4:** At all times in edit mode a population count (ie the number of living cells) is displayed, however it is normally off during life mode as it slows the computer down a little. This key enables you to switch it on or off. This can only be used in hi-res or lo-res edit mode. **f5:** This clears the universe ready for a new one. It can only be used in lo-res edit mode. **f6:** Whenever you enter life mode the universe is saved in memory. This key restores that saved universe. This is useful when designing shapes as a shape can be designed and then watched and then restored to be edited or watched again. It can be used in hi-res or lo-res edit mode. **f7:** This option allows you to load a universe. It can only be used in lo-res edit mode. **f8:** This option allows you to save your universe. It can only be used in lo-

res edit mode. **f9:** This displays a help screen. It can be used in either lo-res or hi-res edit mode.

NB Files for Superlife are automatically prefixed with "S." when saved onto the disk although you need only type in the filename (without the S.) when giving file names in the program.

<ESCAPE> gives you the option to quit or return to the menu however it should not be pressed while in life mode as the computer will not respond until you press f0.

OSCLI commands can be executed simply by typing "**".

Sample Universes

Six sample universes are supplied. Here is some information on each one: **UNIVERS** This universe contains a whole population of life forms. A glider gun creates a new glider every fifteen generations which walks down a corridor until it is consumed by a glider eater. A large selection of oscillators are also there such as a Pulsar, Barber's Pole, a Hertz Oscillator, a tumbler and others.

BIGGRID This is a grid of squares that fills most of the universe. It would be totally stable if it wasn't for four extra cells in the centre. When this is animated, the instability spreads like a disease through the grid and for this reason the four extra cells are called viruses.

CREDITS These letters quickly explode into chaos so it is best watched one step at a time.

Fast Life

Next month we'll have a Fast Life version of the program on Disk User. It has a much smaller universe but in Fast Life at maximum speed life forms explode into fabulous changing shapes. Don't miss the fireworks on next month's disk.

Sample shapes

```
..0..
...0.
.000.
```

This is one of the most common shapes, a glider that will travel down and to the right

```
....0..
.....0.
..0...0.
..0000.
```

This is a larger spaceship that moves to the right

```
.000...
..0..0.
..0...0.
```

This is a starting pattern that grows very well

```
..0..
..0..
..0..
....
.000.
```

This is another good grower. Watch out for the two gliders produced on a collision course around the 150th generation

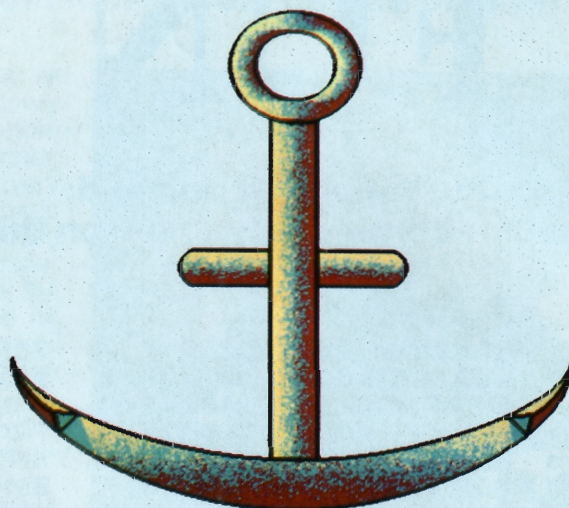
```
.00000.
..0...0.
.00000.
```

This is a pattern that quickly grows into a pulsar

Watch out for interesting shapes formed and try isolating them. You never know what you might find!

ANCHOR

it NEVER lets go



The complete memory resident programmer's assistant Calculator, Notepad, Monitor, ASCII Table and more Instantly available – just press <CAPS LOCK><SHIFT LOCK> together
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is a second to jot a note down, or do a quick calculation, and hey presto you can get back to work straight away.

Fully Documented

Anchor comes complete with a desktop-published, and laser printed manual that will help you get the best out of Anchor's more powerful features. Complete with worked

tutorial examples for beginners, the manual is a valuable reference work in itself.

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FLOPPY FUN

**Due to popular demand:
an infallible cheat method – ready to run on this month's disk!**



Mark Gidley's *Easy Poke* program is fiendishly simple and a great way of generating lots of cheats to help you explore your favourite games and dazzle your friends with your high score abilities.

Our thanks to Mark Gidley who created *Easy Poke* and to the hordes of readers who supplied the data.

How it works

Really simply! Just load the program, change the data where shown with the relevant pokes for your favourite game, save it again and you have an instant cheat mode for any game. Any game, that is, that doesn't use interrupts or use memory from &380 to &3F0.

When you want to use it, just run the program and insert the game disk when prompted. *Easy Poke* is then enabled during game play by pressing @ and p toggles a game pause.

Enjoy – but please recall that as the following pokes have come from a variety of sources, some may work on tape versions only! Further pokes gratefully received.

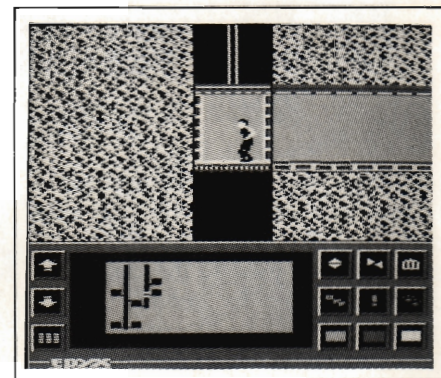
Easy Poke Data

Below we list game title, pokes to enter and the effect. What could be simpler?

AIRWOLF &63,&0D64 Shields
ALIEN 8 &63,&0B93 Inf.lives
ARCADIANS &63,&4B3E Inf.lives
ASTEROIDS &63,&2B7C,
&63,&2B8F Inf.lives
ATIC ATAC &63,&372B Inf.lives
BANJAX &43,&71BC Inf.lives
&80,&1FB0, &02,&1FB1 Immortal
BEELINE &24,&27EE, &E8,&27EF,
&FB,&27F0 Inf.lives

&A6,&23D1, &04,&23D2,
&CD,&23D3, &0C,&23C1 Immortal
BIRD STRIKE &63,&22AB Inf.lives
BLAGGER &74,&2964 Inf.lives
BLITZKRIEG &53,&183B No tanks
BOFFIN &01,&2859, &01,&2869
Inf.lives
BOUNTY BOB &63,&1C56 Inf.lives
BRUCE LEE &0C,&0989,
&12,&098A Immortal
&0D,&15C8 Lives
BUG EYES I &2C,&24BB,
&82,&24BC Inf.lives
BUG EYES II &20,&E3A Inf.lives
CASTLE OF GEMS &DD,&293F
Immortal
CASTLE QUEST &63,&2995 Inf.lives
CAVEMAN CAPERS &63,&26A5
Inf.lives
CAVEY &63,&158A Inf.lives
CHUCKIE EGG &3C,&2A45,
&CA,&2A46, &3A,&29F2,
&AF,&29F3 Immortal
CITADEL &0C,&302D Energy
&98,&3029, &0F,&302D,
&EA,&302E, &C9,&3041 Immortal
CODENAME: DROID &2C,&3D88,
&B1,&3D89 Infinite energy
&2C,&2D04, &8A,&2D05 Inf.mines
&0A,&23A2 Immortal
COMBAT LYNX &2C,&285A,
&E8,&285B Inf.lives
COMMANDO &FE,&2EB5 Auto fire
&01,&4011, &02,&4014 Immune
to bullets
&02,&3CDC, &02,&3CDF Immune
to grenades
CONFUZION &35,&1A5F Lives
CONTRAPTION &2C,&1992,
&BA,&1993, &2D,&1994 Inf.lives
CYBERTRON MISSION
&63,&1A9E Inf.lives
Dr.WHO & MINES &0C,&08EC,
&16,&08ED Immortal
&63,&08FB Inf.lives
DONKEY KONG JR &63,&1461
Inf.lives
DRAIN MANIA &63,&2CBF Inf.lives
&63,&2AAE Inf.zaps
EVIL DEAD &43,&03D2 Inf.lives

FORTRESS &C9,&2BB8 Immortal
&63,&2C55 Inf.lives
FRENZY &63,&2AAE Inf.lives
FRAKI &63,&0BE5 Inf.lives
&6C,&1019 Mega-jump
&91,&1269, &2C,&1133,
&91,&1139 Immortal
FRUITY FREDDY &63,&2B74
Inf.lives
GALAFORCE &63,&0C9B Inf.lives
GHOULS &01,&2807 Inf.lives
GYROSCOPE &63,&1D0D Inf.lives
HACKER &34,&04C2 Inf.lives
&63,&1A07, &63,&19FA,
&63,&19ED Stop time



IMPOSS. MISSION &01,&1072
Inf.time
JET BOOT JACK &C5,&174F
Immortal &63,&1789 Inf.lives
JET PAC &01,&17CE Inf.lives
JET SET WILLY &63,&17CD
Inf.lives
KARATE COMBAT &AE,&2F7E
Energy
KARL'S KAVERNS &63,&1C03
Inf.lives
KILLER GORILLA &63,&1E88
Inf.lives
KISSIN' KOUSINS &2C,&2509,
&79,&250A, &1A,&250D,
&E2,&250E Inf.lives
KNIGHT LORE &63,&143B Inf.lives
LABYRINTH &63,&3723 Inf.lives

LUNAR JET MAN &63,&3B2A
Inf.lives
MANIC MINER &63,&67EC
Inf.lives &40,&67D6 Immortal
MAZE &63,&2E2C Inf.lives
&63,&2EE1 Bullets
METEORS &63,&1A0E, &63,&20E9
Inf.lives
MINESHAFT &63,&17BF Inf.lives
MOUSETRAP &63,&18FC Inf.lives
&75,&18F7, &68,&18F8 Immortal
MR EE &2C,&11CF, &CE,&11D0
Inf.lives
MR WIMPY &63,&3092 Inf.lives
NEUTRON &2C,&14FB,
&9D,&14FC Inf.lives
NIFTY LIFTY &01,&1B6C Inf.lives
NIGHTSHADE &63,&520F,
&63,&5236 Inf.lives
&63,&5232 Immortal
NUTCRACKA &2C,&2FE2,
&B8,&2FE3 Inf.lives
&CA,&2FE4, &E5,&2FE5,
&DA,&2FE6, &A6,&2FE7,
&7C,&2FE8, &C5,&2FE9 Immortal
PAPERBOY &63,&173D Inf.lives
&01,&1415, &0C,&1690 Immortal
&0F,&170F, &63,&1487 Papers
PHANTOM &63,&3993 Energy
&63,&3C35 ECG level
PLANETOID &01,&1D92 Inf.lives
&01,&1ACA Inf.bombs
PSYCASTRIA &63,&128C Inf.lives
&43,&1779, &43,&18C3 Immortal
RAVENSKULL &63,&1B30 Inf.lives

&B6,&1B9C Energy
&03,&027E Level
REPTON &F0,&10FF Maps
&A6,&1399, &E2,&139A,
&FD,&139B Boulders don't kill
&40,&14CF Lizards
&63,&1780 Inf.lives
REPTON 2 &63,&1C7A Inf.lives
REPTON 3 &63,&3119 Inf.lives
&63,&1E7F Inf.time
&0C,&304A Maps
REPTON/WORLD &63,&311B
Inf.lives &43,&055A,
&43,&0597, &43,&0618,
&43,&0698, &43,&1EBA,
&43,&2830, &43,&2A85,
&43,&5C3E Immortal
&0D,&3052 View maps
REVS &0F,&16CD New gear
ROCKET RAID &CD,&174D
Immortal &63,&178F Inf.lives
SABRE WULF &63,&3B76 Inf.lives
SENTINEL &DA,&16A8 No turns
SINISTAR &63,&2407 Inf.bombs
&01,&2ADB Inf.lives
SON OF BLAGGER &63,&2F14
Inf.lives
SPOOKS & SPIDERS &63,&18AE
Inf.lives
SPY HUNTER &01,&2CE4
Stop time
SQUEAKALISER &63,&2B59,
&63,&480A, &40,&49C1 Inf.lives
&40,&4996 Immortal
STAR DRIFTER &63,&576B

Inf.lives &63,&515D, &08,&4517,
&63,&574F Oxygen
STRYKER'S RUN &30,&2464
Inf.lives
SURVIVORS &xx,&111A Level=x
&24,&11A4, &E4,&11A5,
&F9,&11A6 Inf.lives
TAPPER &63,&3E38 Inf.lives
TARZAN (Martech) &0F,&578C,
&8A,&11A6 Energy
TARZAN (Alligata) &63,&2ED2
Inf.lives
TEMPEST &63,&06DD, &63,&0764
Inf.lives
TEMPLETON &24,&239E,
&18,&239F, &E1,&23A0 Inf.lives
THRUST &01,&1971 Inf.lives
&20,&1A63 Inf.fuel
VINDALOO &2C,&24BB,
&82,&24BC Inf.lives
VOLCANO &63,&1F7A Inf.lives
WAR &2C,&02BC, &6B,&02BD
Inf.lives
WIZADORE &05,&2087 Inf.lives
&06,&2EA8, &07,&2DE3 Arrows
no effect
WIZZY'S MANSION &7F,&28EA
Inf.lives
YIE AR KUNG FU &63,&12B9
Inf.lives &14,&11C4 Power
ZALAGA &63,&13A5, &63,&14FF,
&63,&18DD Inf.lives
ZANY KONG JR &63,&37B1
Inf.lives
Many games &02,&0262 Sound off

MENU PAGE TWO. OPTION THREE.

Abbas

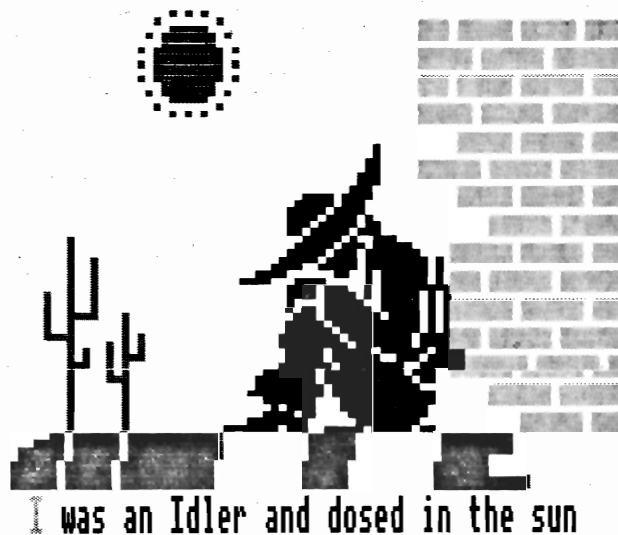
COLLECTOR'S ITEMS

**I is the latest letter of the alphabet
to get the Abbas treatment.**

**Animate the alphabet with
computer artist Abbas. Every month
he animates a letter. Just choose
this month's letter from the alphabet
menu to see the action.**

Instructions on how to use the
menu for other letters were given
in Disk User number seven.

Letters A to H are available on
back issues (see SERVICES this
issue).



TRANSFER

Taking your disk files one step further

Disk User programs can be so useful that you'll often want to transfer them to their own disks and use them separately, without title page or menu. To do this successfully you'll need to learn a little about BBC BASIC and the DFS (Disk Filing System). In Disk User we don't believe in referring you to the manuals to here's an explanation of how such a transfer can be achieved.

Let's take the *Tracer* program as an example this month. The relevant file on Disk User is:

TRACER

Make sure you have a blank data disk ready to receive the file. Insert Disk User and type

***COPY 00 TRACER**

and press the RETURN key. Follow the keypress prompts on the screen until the > prompt returns. Now

***COPY 00 EXPAND**

and press the RETURN key. Follow the prompts.

Because TRACER is a compressed file special to Disk User the first thing to do with your new disk is to type

CHAIN "EXPAND"

and to choose the option for Tracer. The program will now expand out the separate programs which make up the package. There is even a !BOOT file ready to kick the program into life. First however you must add the EXEC option to the disk. You do this by typing:

***OPT 4,3**

Give it a Title

You can now type

***TITLE TRACER**

and press the RETURN key. Now type

***CAT**

and press the RETURN key and the screen will display the title *TRACER* with the files !BOOT, EDITOR, CREATOR, MENU, SEARCHR and !HELP-ME lined up below along with EXPAND and TRACER - which you can now delete. You may now use this as your *database* disk, saving other useful datafiles in the space available (space is something we don't leave on Disk User itself).

Details are also given on screen when you select Tracer from the Disk User menu.



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ADVANCED DISK USER GUIDE

Format tracks with non standard sector sizes and sector ids. Read and write from such tracks with data or deleted data. Unformat selected tracks. Obtain sector ids for any track and verify the contents of each sector. Handle logical sectoring techniques. All this and more with the Extended Disk Editor.

The 8271 FDC is a powerful work-horse seeing to all we might want of a disk drive. It is also a very versatile and at times not a little unforgiving chip! Most of what is to follow remains appropriate for the new generation of BBC owners who alas will never experience the joys of 8271 ownership, merely its emulators!

Acorn DFS uses a specific data standard of 10 sectors of 256 bytes per track. 40 or 80 tracks per disk surface. The FDC can manage from 1 to 18 sectors per track and each sector can contain from 128 to 2048 bytes of data. Other formats are available for 8 inch disks but these will not be discussed here. The DFS provides a comfortable front end to disk work providing at most stages a safe environment in which little can go wrong. On the other hand poking around directly on disk is a very hazardous business prone to the odd catastrophic result for one too cavalier.

Given these reservations there comes a time in every disk user's (no pun intended) life when something serious goes wrong anyway. It is at times like these that it would be nice to be able to wander around the disk

with a view to impromptu patchwork or simply to be able to exercise a healthy curiosity.

EDISK 3.02 allows you to do either and contains facilities for disk investigation most other routines have lacked. Format tracks with non standard sector sizes and sector ids. Read and write from such tracks with data or deleted data. Unformat selected tracks. Obtain sector ids for any track and verify contents of each sector. Handle logical sectoring techniques.

EDISK is written in extremely optimised BASIC (don't ring me to ask what it means!) as there seems no necessity to write in machine code unless the routine intends to sit in ROM or is multiplying huge matrices – which EDISK doesn't and is not, respectively. However, in order that EDISK can operate in mode 3 it was necessary to compact it to the extent that it is, save to those with hours to spare bent on its dissection, unreadable. The program uses the mystical – when I was a lad no one knew what it did – OSWORD &7F which, for those of you in the money, means it won't work on the Archimedes. Life is tough!

A description of EDISK 3.02

The program is operated by the function and shift-function keys and the usefulness of the key overlay printed at the end of the article should at this point become crystal clear.

The stand alone function keys are, not to be too circular, *function doubled* and can be used to enter one of the five editing fields. The first three are DRIVE, TRACK and SECTOR. The maximum values permitted in these fields are respectively: &03, &4F and &09. All input is in hex and EDISK will not permit out of range values to be submitted anywhere.

A word of warning: setting the TRACK field in excess of &27 on a 40 track drive is not healthy!

The four remaining keys enter either the SIDS (Sector IDS) or DATA field. Movement of the cursor within these fields is accomplished by the cursor keys. SIDS are displayed at the top right of the screen. Beneath them is the PHYSICAL SECTOR SCALE and below that the RESULT field. SIDS will accept any hex value, while pressing COPY will toggle the appropriate deleted data flag in the RESULT field. DATA occupies the bottom of the screen and can be

Cut along the dotted line and detach function key strip.

EDISK	FORMAT TRACK	UNFORMAT TRACK	VERIFY TOGGLE	R E A D		SWAP	NEXT	WRITE
				–	SECTOR	+		
	DRIVE		TRACK	SECTOR		S I D S	D A T A	
						EDIT	EDIT	

toggled between hex and ascii input by the COPY key.

ASCII editing accepts any character with a code from 0 to 127; that is 'CTRL @' to 'DEL'. This enables control strings to be entered easily. On re-entry to either field the former cursor position is remembered.

The SHIFT/function keys display requests for input and do not change the field in use. It should be understood that because EDISK occasionally expects to encounter sneaky logical sectoring ploys, the DRIVE, TRACK and SECTOR fields are always taken to refer to the physical attribute and NOT the logical.

Control panel

From left to right the EDISK control panel contains:

FORMAT TRACK: To format a track it is necessary to specify the drive, track, number of sectors to be formatted and to create a table of sector ids. The DRIVE, TRACK, SECTOR and SIDS fields are taken respectively to contain this information. Their contents should be verified before issuing this command. Remember in this instance only, SECTOR should contain the number of sectors to be formatted *not* a pointer to a disk sector! Destroys SIDS and DATA on disk track and updates RESULT.

UNFORMAT TRACK: Uses the DRIVE and TRACK field information only and results in the specified track being made unrecognisable to the 8271. Destroys SIDS and DATA on disk track and updates RESULT.

VERIFY TOGGLE: Toggles the verify flag ON/OFF. Affects the READ command. When ON, READ will verify every sector on the specified track independantly and register its findings in the RESULT field. READ can thus be speeded up by clearing this flag though information on other sectors will be lost until they are individually read.

READ SECTOR: Uses the contents of the DRIVE, TRACK and SECTOR fields to read SIDS and DATA off disk. Remember these fields are the physical attributes!

- = **previous sector.**

SECTOR = sector as pointed to by fields.

+ = **next sector.**

Note the physical track as contained in the TRACK field is not necessarily the same as the logical track contained in the newly read SIDS field. The same is true for physical and logical sectors. READ will obtain the contents of the physical sector specified in the SECTOR field. To obtain the contents of a particular logical sector consult SIDS and read off the appropriate physical sector from the PHYSICAL SECTOR SCALE. Updates SIDS, DATA and RESULT fields.

SWAP: Swaps SIDS field with SIDS MEMORY.

NEXT: EDISK can cope with sector sizes up to 1024 bytes length. This size of data cannot be represented on screen in one block and so is stored in DATA MEMORY. The DATA field can conveniently be thought of as a window to 1024 bytes of data. Displays the next 256 bytes of data in DATA field.

WRITE: Uses the contents of the DRIVE, TRACK, SECTOR, DATA and RESULT fields to write DATA to disk. Remember all attributes are considered physical. Command calls SWAP and reads SIDS from disk into SIDS field to check logical track and sector entries in order to achieve write even if physical and logical attributes do not match. If the contents of the RESULT field at the appropriate sector indicate deleted data (bit 5) then write deleted data otherwise write data. Destroys DATA on disk sector. Updates SIDS with SIDS from written track. SIDS MEMORY equals previous SIDS.

ESCAPE: To exit the editor.

In conclusion

EDISK should be able to cope with all your disk editing needs. (Perhaps some you never knew you had!) From patching a faulty catalogue to creating a dual 40/80 format disk.

EDISK will also aid in the creation of *protected disks* in allowing the testing of peculiar formats. Such formats can employ non-standard sector sizes (it is possible to include different sector sizes on the same track!). Unformatted tracks whose existence can be checked for therefore preventing copying onto formatted disks. Deleted data rather than data. Logical sectoring; where the logical attributes in the sector id do not match the physical ones.

EDISK will also aid in the creation of 'protected disks'

Most of the fun is in devising your own formula and in this respect EDISK will make the task a good deal easier.

Of course having created a unique protection system you will have to write your own loading routine as the DFS will no longer tolerate the format. This can be achieved by using the OSWORD &7F family of commands. Unfortunately a description of OSWORD &7F is beyond the scope of this article though a recommended source of information is:

The Advanced Disk User Guide by Colin Pharo published by Cambridge Microcomputer Centre.

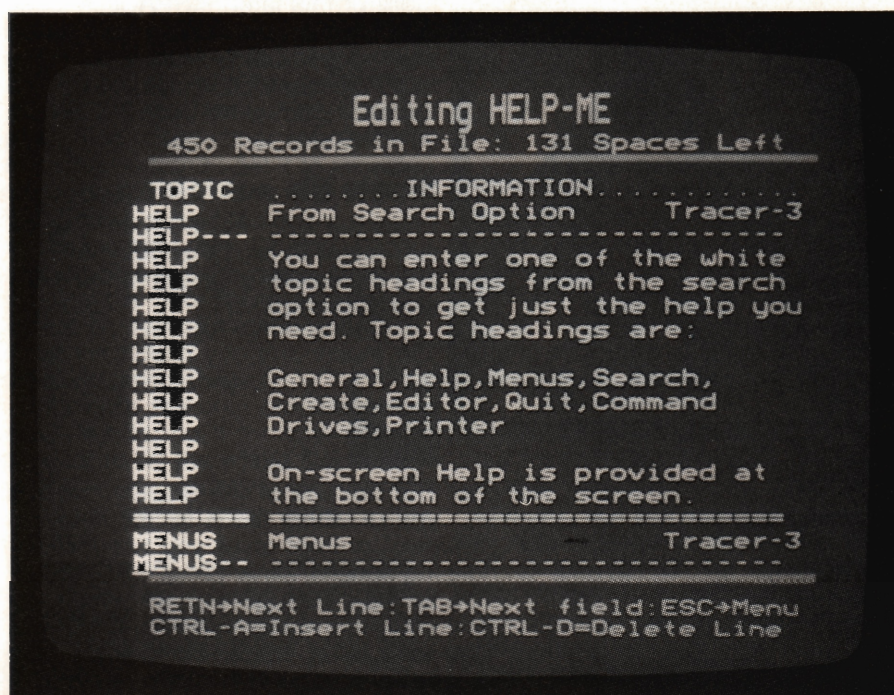
Finally, although all disk writing commands take the precaution of insisting that SHIFT be pressed, accidents can happen. A moment of carelessness can destroy a catalogue. Have fun and take care!

disk USER

8271 FDC Extended Editor 3.02	Logical track:	00 00 00 00 00 00 00 00 00 00	
(C) 1987 Design Ergonomix	Head number:	00 00 00 00 00 00 00 00 00 00	
	Logical sector:	00 01 00 01 02 03 04 05 06 07	
	Data size:	01 01 01 01 01 01 01 01 01 01	
Drive: 00	Track: 00	Sector: 01	00 01 02 03 04 05 06 07 08 09
Block: 00		Verify: 01	00 00 00 00 00 00 00 00 00 00

TRACER

TRACER-3, the high speed *Index Creation and Search Program* for the BBC B and Master 128



TRACER-3 allows you to create a complete database with up to 26 disk files (one for each letter of the alphabet if you wish) and yet you can search a full file from end to end in less than 4 seconds on the Model B. The basic record structure is the single 40 character line, and on the model B this allows 555 records per file to be held in memory for fast access. (607 on the 128K machines).

Up to 16,000 records per disk are possible and with the *Multiple File Search* option, all these can be searched in a single operation and very quickly. Full on-screen help is provided, and should this ever prove inadequate, a set of instructions is provided in the form of a Help-Me file.

Applications for Tracer-3 include:
Library Catalogues
Magazine Indexes
Look-up Tables
Dictionaries
Administration Files

The following text comprises a tutor-

ial approach to introduce you to Tracer-3. You should refer to the disk wherever you see the Disk logo. The letters or words in angle brackets, e.g. <SHIFT>, mean press that key once.

Getting started

Selecting the option for *Tracer* from the Disk User main menu will prompt you to make a working *Tracer* disk. **Do this now.** Remember to set the !BOOT option by typing *OPT4,3. Now press <SHIFT-BREAK> to bring up the *main menu*, (Master 128 owners should boot up in DFS mode).



You should note four options on this menu, SEARCH, EDIT, CREATE, and QUIT; ignore them for the present and press <1> to go to the SEARCH sub-menu.

MAIN MENU OPTION 1: SEARCHING



The top line of the display reminds you that you are in the SEARCH sub-menu, tells you that as yet there is no file in use and shows you which disk drive is being accessed by the Search Routine. The HELP-ME entry below the top line is the name of the data file provided with your *Tracer* disk.

As you add new files to a disk using the CREATE option from the main menu, additional entries appear in the space below the top line, and each one will have a single letter of the alphabet as its key letter. To search these files, you need only press the letter in front of them. e.g. pressing <A> from this menu sets up the HELP-ME file for searching. HELP-ME is a version of the main instructions for using TRACER-3 in case these written instructions are not readily to hand.

The </> Search File in Use option allows you to search the file indicated in the header line. If None is indicated this option just beeps to remind you to use a letter to load a file as explained above. The <0-3> Change Drives option allows you to see what files are on disks in the other drives in your system. This option is not much use until you have created files on other disks which you can access from your other drives. It appears on all the sub-menus. (Selecting the drive numbers of drives you do not have or of drives which do not contain a *Tracer* file will cause the computer to either wait until you provide a disk or signal an error. If after a few moments there is still nothing happening, the safest way to recover is to start again with <SHIFT-BREAK> and the screen will remind you of this.)



The <@> key gives you the powerful multiple file search option. More of this later. <SPACE> takes you back to the main menu when you want to finish searching. Press <SPACE> and then <1> to go to the main menu and back just to see how it works.

Single file searching

Press the <A> key from the Search sub-menu to load the HELP-ME file and the screen changes to the word search prompt.



The top line of the display reminds you of which file is in use, and the main prompt gives you two searching options, either press <RETURN> to look through the whole file, or enter the word to search. When you have used *Tracer* for a while, and have several files available, it is a good idea to look at the first page of

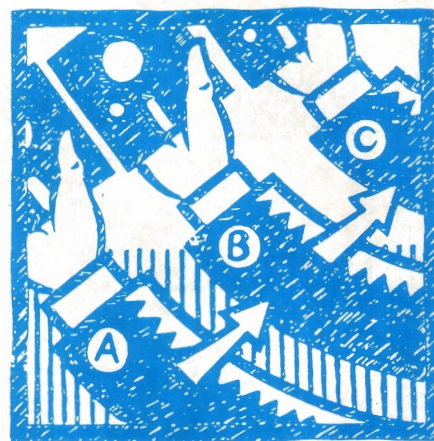


a file to remind yourself of the general structure. Often an expanded title to the file, some explanatory notes or a key to abbreviations is needed, and these are always best entered on the first page. So, let's deal with the look-through option first.

Looking through a file

Press <RETURN> and watch the screen change to the first page of the HELP-ME file. Above the top line is a header which tells you what file is in use and how many records and free spaces are available. Below the bottom line the text reminds you to use the cursor keys to scroll through the file, or to press <ESCAPE> to return to the menu. Nothing else happens until you press one of these keys.

Press the <down arrow> cursor key a few times to move down through the records. If you go too fast or too far you can retrace your



steps with the <up-arrow> key. This option simply allows you to move slowly through all the records in your file.

As you will see later, you can do it equally well in the EDIT option, but in this case the screen is "live", and if you press other keys the records will be altered. So, if you just want to browse without doing any editing, this look-through option from the Search sub-menu is best.

Searching for a word.

Press <ESCAPE> to get back to the Search sub-menu and press </> to start searching it. At the word search prompt, type in the word MENUS <RETURN> and the next prompt asks whether or not you want to print out the results of your search on a printer. It's not a good idea to do this for the first word you enter because you may get some unexpected results. So, for the time being, simply press <RETURN> or <N> to decline this option. After a moments hesitation, records in the HELP-ME index which contain the word MENUS are displayed, in this case help on menus. The message "Finished Searching HELP-ME" tells you that there are no other references to MENUS in the HELP-ME file. If the word you had entered was not in the file, the message at this point would inform you by adding "MENUS not found." Below the bottom line, the prompt "Want to find another word Y/N? N" reminds you to either press <N> or to hit <RETURN> in order to leave this file and return to the sub-menu.

Tracer searches incredibly quickly, on a Master 128 it takes less than 2 seconds to search a whole data file, try it for yourself. Any combination of letters, numbers or punctuation marks can be used when in search mode. The teletext colour codes using keys can also be entered using the function keys <f1-f7>. If you don't understand how to do this please read the relevant section in

your User Guide, titled: *Teletext control codes and Mode 7*. This can be useful when looking for the first letters of a coloured field, and you want to avoid finding the same combination of letters in a field of a different colour. Press `<RETURN>` or `<N>` to indicate the search has been completed. The Search sub menu will again be displayed.

Searching several files

Starting from the Search sub-menu Press `<@>` to enter the multiple search option. This enables you to search any or all of the files on your disk in whatever order you choose. This in turn enables you to set up large files for rapid searching by dividing such files into several parts which can be accessed as one block by this option. So, whilst on the face of it *Tracer* operates with small files, this option effectively links all the files on a disk for the purposes of searching.

Enter the letters of the files to be searched or press `<@>` for a second time if you want to search all the files on the disk. The single dot at the cursor corresponds to the number of data files on the disk, and as you create more files, more dots will appear. With only one file to play with the options are severely limited, but as files are created the value of this option will become apparent.

Printing the results of a search

If you have a printer connected up and you wish to print out the results of any of the searches, simply type `<Y>` to the print option which follows the keyword insertion. If the print option is selected when the printer is not ready to print, the computer will appear to hang up. Simply press `<ESCAPE>` to regain control and either set the printer up or decline the print-out option next time through.

If the print out is all on one line, it

means that the printer is not providing the line feeds necessary. This can be remedied by returning to the Search sub menu and entering `<*fx 6,0 RETURN>`. (As a longer term option, you could either change the printer dip switch to get it to provide line feeds, or add it to the *Tracer* !BOOT file. On the Master you could set it up using the Control Panel program on your Welcome disk, or by using the *Configure command. Consult the relevant manuals and/or get expert help if you are unsure of how to do any of these.)

Print outs are only obtainable in Search mode, so if for any reason you want to list the whole file, follow the above instructions having entered a space or a field colour code as the keyword.

NB. You are not able to edit screens whilst in SEARCH mode. If you spot an entry you want to alter, note its position and get back to it using the EDIT option.



MAIN MENU OPTION 2. EDITING

Press `<ESCAPE>` and then `<SPACE>` from anywhere in the system to get back to the main menu. To edit a file you first press `<2>` to get to the Edit sub-menu.



The Edit sub-menu is very similar to the Search sub-menu. You select a single letter corresponding to the file you wish to edit, and you can change drives if you need to consult another disk. Press `<A>` to load and edit the HELP-ME file. The screen which appears displays the last 15 records in the file (or all the records if ever there are fewer than 15). The header line tells you the name of the file in use, and how full it is. The cursor is always at the start of the last record until a key is pressed. The foot of the screen reminds you of the actions of some of the special



keys (see below).

When in the EDIT mode, you can add new records at the blank line starting with a `>`. (If no `>` is visible pressing `<RETURN>` creates one.) You can also type over wherever the cursor control keys allow you to go. You are not allowed to go beyond the last record in the file, and you cannot move, delete, or type over the invisible field separators which run down the screen between the fields. The cursor will stop at these and you must "step over" them with the left or right cursor control keys. You can step quickly to the next field using the `<TAB>` key, and when you have finished your record press `<RETURN>` to get another record space to fill in. If you have been editing records above the last line in the file, `<RETURN>` will only move the cursor down one line.

If you operate the cursor control keys you will find that the cursor can be moved around the file in the directions indicated by the arrows on those keys (the screen will scroll). Now, if you press any of the normal keys you will see that the character you typed replaces the one under the cursor on the screen.

In the EDIT mode some of the keys have special actions: `<SHIFT>` with the up or down cursor keys gives you fast up or down scrolling. `<ESCAPE>` gets you back to the menu page via a Save File prompt to remind you to save your alterations. `<DELETE>` deletes the character to the left of the cursor. The one character it will not delete is a field separator. "Step over" the field separators with the cursor keys.

`<CTRL-D>` i.e. D pressed while CTRL is held down, causes the line on which the cursor rests to be deleted, and the space it occupied to be closed up. This takes slightly longer to act if the deletion is made near the beginning of a large file than it does near the end. `<CTRL-A>` This combination of keys causes a space to be inserted above the line



containing the cursor. In order to fill the space created by this command you can simply type new text into it. As with <CTRL-D> its speed of response depends on the number of records which have to be moved to make way for the space. These line-insert and line-delete keys will auto-repeat, so be careful not to hold them down for too long.

<TAB> can be used as indicated above to step to the next field. <BREAK> leaves *Tracer* in an uncontrolled fashion. Any editing not saved to disk will be lost.

When the available memory is filled with records, the header line will indicate no spaces left. If you try to go further, a Memory Full message will be displayed, and you will have to save your file and create a new one with a related name if it is to be used as a continuation.

The best way to get to know the Editor is to experiment with it so why not have a go now. You will find that *Tracer* automatically selects upper case for each record inserted. You can override this within a record, but words in lower case will not be found during a search.

If as a result of experimenting you have made some drastic alterations to your HELP-ME file don't worry. Press <ESCAPE> twice to leave the Edit screen and decline the option provided by the Save prompt which comes next. If on the other hand you want to save your alterations on disk you should of course accept the Save option. When you get back to the Edit sub-menu you can press <SPACE> to get back to the main menu.

MAIN MENU OPTION 3: CREATING A NEW FILE

Option 3 from the main menu enters the Create File routine which allows you to set up the necessary field structure for a new file. *Tracer* uses the simple approach of asking you to define a heading line in which each field but the first is preceded

by a teletext colour code which not only defines the colour of the following field but also the length of the preceding one.



The Create sub-menu which appears displays the file names already in use and allows the usual drive selection option so that you can look at disks in your other drives, and create files on them. Press <3> and then </> to start the create routine, and you are asked to enter a name for the new file. The name you choose must be a legal DFS file-name. A maximum of seven letters are allowed, illegal entries including accidentally using a name already on the disk will be drawn to your attention.



Enter TRIAL <RETURN> to create a file named TRIAL. The screen changes to give you instructions and a 40 character dotted line on which you can build your heading line. Whatever you enter will define:

i. The heading which will appear on the top line of your file throughout its life. So think it out carefully before you enter records. It cannot be changed without destroying any records you have entered.

ii. The colours used in Mode 7 to display the fields. The program uses teletext colour codes to separate fields.

iii. The number of fields you want in your 40 character (one line) records. You can choose how many fields you wish to use, but remember each field separator uses up one of the 40 characters available in each record.

iv. The maximum number of characters allowed in each field.

To see how it works, type in the following carefully:-

-----Prime Minister-----/Party/
Served-<RETURN>
but instead of the "/" put in a colour



code using one of the red function keys f1 to f7. If you make a mistake you can edit by moving the cursor using the cursor keys and then typing over, or deleting back to the error. When you press <RETURN>, the program jumps to the Edit menu and the list of files should contain your newly created TRIAL file. To commence adding records, just load and edit TRIAL. You could now enter records as follows:

SIR ROBERT WALPOLE <TAB>
WHIG <TAB>
1721-42 <RETURN>
EARL OF WILMINGTON <TAB>
WHIG <TAB>
1742-43 <RETURN>
HENRY PELHAM <TAB>
WHIG <TAB>
1743-54 <RETURN>
DUKE OF NEWCASTLE <TAB>
WHIG <TAB>
1754-56 <RETURN>

etc. etc. When you have had enough, press <ESCAPE> and <Y> to save the index.

Deleting a file

If you decide not to keep TRIAL you can delete either from within *Tracer* or from BASIC. From a sub-menu you type *ACCESS TRIAL<RETURN> to unlock the file and then *DELETE TRIAL<RETURN>.

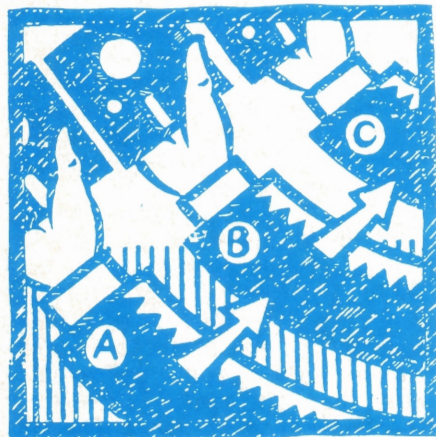
MAIN MENU OPTION 4: QUIT

This option returns control to BASIC. Remember **always keep backup copies** of valuable data. Disk User cannot be responsible for the safety of any such data on magnetic media.

Tracer support

Over the next few issues we will include new Tracer data files on Disk User. these will include a "kings and queens of England" file and a Dewey (library) classification file.

If you create a datafile with Tracer, tell us about it and we'll **pay** you to include it on a future Disk User.



WELCOME TO AI?

Expert systems – Highbrow or just High-sounding?

In a truly 1980s vogue, expert systems are fast becoming part of computerland's fashionable applications set. Their seemingly intelligent capabilities – much debated in some quarters – have resulted in the relatively popular conception that expert systems are synonymous with artificial intelligence – or AI.

The use of such heady acronyms as AI might have led you to regard the expert system as being the sort of program that required colossal computational power, and quite out of reach for the average BBC or Master

user – I must confess I initially thought this myself. When in reality, nothing could be further from the truth, as a reasonably useful expert system will happily reside on a BBC, let alone a Master. And as for their sophistication, well the idea of programming a limited expert system need not be ruled out as many of the computational techniques used in such programs are surprisingly straightforward. High-sounding maybe, but expert systems are certainly not highbrow; well not half as highbrow as you might have thought.

What's an expert system?

Briefly, expert systems are an attempt to emulate the knowledge and more important, the reasoning of a human expert of some kind. *Note this is one of several viewpoints, what is your opinion? (Ed).* The whole concept is based upon the accumulation of knowledge as a result of experience. It is this very experience that an expert system seeks to impart, and more importantly offer to persons who have not acquired it. The scope for such expert systems is immense, with specialist applications which can be practical, technical, scientific or whatever.

Using Knowledge

The fact that human experts of all kinds share a universal process of reasoning when problem solving or diagnosing a situation, makes possible the idea of an **Expert Shell**, where the knowledge base can be programmed according to a particular user's needs. The knowledge base being a collection of specific rules. Rules which are more often than not, painstakingly arduous to achieve – we'll talk about the knowledge base later.

The Heart of The Machine

Within an expert system, the computations that utilise the knowledge base in a meaningful and apparently intelligent manner, may be as identical in car maintenance as computer repair. These computations are collectively referred to as the **Inference Engine**, 'whose' nature can be such, as to make the whole program portable, in terms of applying it to a diverse number of subjects. I must admit, 'Inference Engine' is one of my favourite computer phrases, much more exotic than those awful misnomers like 'RAM'.

AI for the BBC

In recent years, Artificial Intelligence,

"NOT ONLY HAVE I CREATED
INTELLIGENCE FROM INERT MATTER,
BUT I'VE GOTTEN HIM A JOB
WRITING FOR DISK-USER!"



or AI languages have received more attention than ever, fuelled by the insatiable curiosity of both business and academic communities. The BBC has seen several fairly good implementations of some of these **Fourth Generation Languages**, or 4GLs, like *Prolog* and in particular *Lisp*. *Lisp*, short for LIST Processing deals with artificial intelligence from a more 'string handling point of view' – that's why it swallows up a large amount of memory.

Another Approach to AI

Meanwhile, in the same 'race', another branch or school of thought has pursued a totally different tack, resulting in the development of concurrent programming languages. **concurrency is thought to be the real key to AI**

Concurrent languages look set to demonstrate a far greater spectrum of artificial intelligence – and as their name would suggest, they are multi-tasking languages in that they can do a number of things at once – in some instances, a great number of things at once. To many, concurrency is thought to be the real key to AI,

which is set to unlock – what will be – perhaps devastating computer power. There are several concurrent languages in existence, but possibly the most up-to-date and the one on everyone's lips is *Occam*, around which the Transputer was designed and built. *Note, did you know that Occam's Razor is the scientific principal that when two theories of equal value are compared the simplest is to be preferred.* Concurrent languages unlike 'textual' AI languages like *Lisp*, are more general purpose, **a reasonably useful expert system will happily reside on a BBC**

and are not aimed at just one application. Along the lines of 'Lisp', the latest intelligence language to reside on the BBC is *MicroCODIL*; a dedicated language purpose designed for the development of expert systems. One major difference needs to be pointed out however, *MicroCODIL* in situations of argument, for example in basic IF..THEN... , does not expect an exact replica of a certain 'textual condition'. In this respect it is very different, and it's inherent 'blurred' type of logic is an attempt to emulate another part of human intelligence,

as our thought process in terms of comparisons and so on is not as exacting as the strict logic of almost all computer languages. It's fairly safe to say therefore, *MicroCODIL* is certainly innovative, and yet another step forward in the quest for true AI.

AI In The Classroom

Developed by Dr Chris Reynolds, also author of *Psychebrot* as seen in *Diskuser 6*, *CODIL* – Context Dependant Information Language – began taking shape in the late 1960s. And since its BBC implementation, *MicroCODIL* has rapidly caught on both as a language for serious programming and as an introductory language to AI. It's difficult to say whether or not the computer world has been waiting for *MicroCODIL*, but one thing is for sure, now as a BBC resident language it will no doubt find application in teaching children about AI as well as acquainting them with expert systems. There is most certainly a niche for such a language in schools, so who knows *MicroCODIL* could eventually become to AI, what *LOGO* is to mathematics. *MicroCODIL* is available from, *Codil Language Systems*, 33 Buckingham Road, Tring, Herts HP23 4HG.

COMPETITION

Prizes GALORE to be WON with Diskuser and DABS Press. Yes £400 worth of goodies, and all you have to do is enter ...

The Prizes

The Winner will receive:

HyperDriver ROM Pack, View Book & Disk, Viewsheet/Viewstore Book & Disk, Sidewriter Disk.

Four Runners up will receive:

HyperDriver ROM Packs

Four Third-prize winners will get:

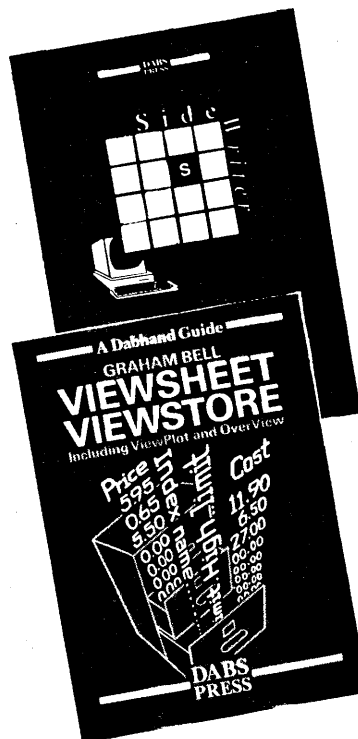
View Book & Viewsheet/Viewstore Book

Four Consolation prizes of:
Sidewriter Disks

The Competition

All you have to do is to think of a really brilliant idea for what *you* could do with *HyperDriver*, and then print it out using the NLQ printing program supplied in this issue.

What we are looking for is imagination, dazzling wit, and deathless prose; oh and by the way it's got to be poetry. So, whether your metier is metre, rhyming couplets, doggerel, or the epic poem, get slaving over a



hot word-processor and send us the results post haste.

What we don't want are copies of commercial work plagiarised, it's got to be all your own work, and please not **too** long, after all Beowulf has already been written; just one page worth should be quite adequate.

If you don't possess a printer, but still want to enter the competition, we will accept handwritten entries, but on condition that they resemble **as closely as possible** what you think *HyperDriver's* NLQ font looks like.

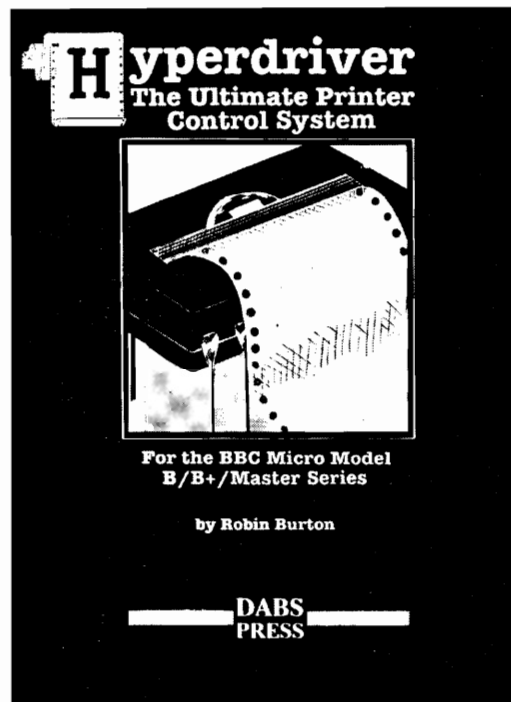
The Rules

Send your entries in to *Disk User*, 6c Belgic Square, Padholme Road, Peterborough, PE1 1XF by June 1st 1988. The results will be published in the August issue of *Disk User*.

The editor's decision is final. No employees of Argus Specialist Publications or their suppliers are permitted to take part.

HYPERDRIVER DEMO

This month we've got a very useful demonstration for you, if you have invested in an Epson compatible dot matrix printer.



The NLQ printing program featured on this month's disk uses *HyperDriver's* own integral NLQ font and provides a Near Letter Quality typeface which, uniquely, is *proportional*.

What "proportional" means

Proportional text means that each character occupies only the amount of space it requires. Non-proportional fonts such as the draft mode on any printer – and NLQ mode on most printers for that matter – are designed so that each character occupies the same amount of space. This means a small *i* will take as much room as a capital letter *M* for example. The off shoot of this is that final printed output looks ungainly and rather un-natural.

Typeface

The *HyperDriver* (and the Disk User) NLQ typeface was designed by Wallace Nicoll especially for *HyperDriver* and is based on a combination of

Palatino and Times typefaces, but of course with matrix printers in mind.

Although it's a fully proportional font with no compromises, special care was exercised in the design to ensure that it has an average pitch of 10 cpi (characters per inch) or less in normal text. This means that it doesn't use any more paper than usual, unlike many commercial font packages. In fact the final output averages nearer to 12 cpi.

Remember that for the very best presentation you should always use a good quality ribbon for the best results.



The program on the disk is called **NLQPrn** and this will accept any standard ASCII text file and send it to the printer exactly as it is.

The program, as it stands, is not

capable of use directly from within a wordprocessor such as View or InterWord, although *HyperDriver* will of course work with any language.

Using the program is simplicity itself. Simply

CHAIN"NLQPrn"

and when requested enter the name of your ASCII text file. A sample file called NLQtext is included on the disk. The text file may of course be on another disk, in drive 1 for instance, and in such cases the full filename route should be given, ie **:1.FileName**.

Text file

The text file is read from disk as needed, so there's no limit on its size other than that imposed by the physical capacity of the disk itself. Page handling isn't included, so you must use your printer's page end skip and margin if you want to format the output.

Remember that tabs or margins

set in a wordprocessor aren't reliable in any proportional font because they just cause a number of spaces to be printed in a fixed type size, while the other characters continue to be printed proportionally.

Using View

View files can be processed directly, but for other wordprocessors you may need to *SPOOL the text out to produce a suitable file, although the program ensures that characters outside the range of ASCII 32 to 126 are ignored, except CHR\$13 of course, which must end each line.

The program is compatible with BASIC 1 onwards and the input file can be any you choose, although a default name of NLQTEXT is provided.

The font data is loaded from the file called FONT, and the program checks this and that your printer is on-line before the print run starts. After output is complete the program returns to the start and you can then print another file.

Print run

Appropriate messages are displayed if there are errors during the run

and you can abandon a print run tidily by pressing the <ESCAPE> key, or abandon the program run by holding the <CTRL> key while pressing <ESCAPE>. You'll notice a moment's delay when you use either of these while the program ensures that your printer is not left hanging, waiting for graphics data that it's not now going to receive.

Printing is carried out in three passes of double density graphics for the highest possible quality, as you'll see in the special BASIC demonstration of the font, but of course the demonstration is many times slower than the pure machine code in *HyperDriver*, so much so that you'll probably notice that the printer will spend a good deal of its time waiting for the program. This is exactly the opposite of the case with *HyperDriver*, which of course can easily keep up with even the fastest printers.

Hyperdriver features

There are literally dozens (in fact about seven dozen) special features in *HyperDriver* that can't be demonstrated in the Disk User demonstration.

One particularly interesting and useful one (and so far as we know, unique) is that *HyperDriver* allows commands to be embedded anywhere in any text in all of its print modes, including its proportional NLQ font. This means that *HyperDriver* can automatically control your printer's tabulation and margin facilities from within the text to change the layout and positioning of the output. You can therefore produce reliable tabulated output in a high quality proportional font like the demonstration font or in your printer's proportional print, just as easily as you can in standard Fica.

That's all there is to it, the only way it could be easier is if you were using *HyperDriver* itself!

Please Note: The NLQ font is the copyright of Dabs Press and may not be distributed without the written permission of Dabs Press. Readers of Disk User are however entitled to use the font and the NLQPrn program as freely as they wish for private use only.

program by Robin Burton, author of *HyperDriver*. Text by Bruce Smith and Robin Burton

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Issue

DISK DATA

Wind of change from behind the Iron Curtain?

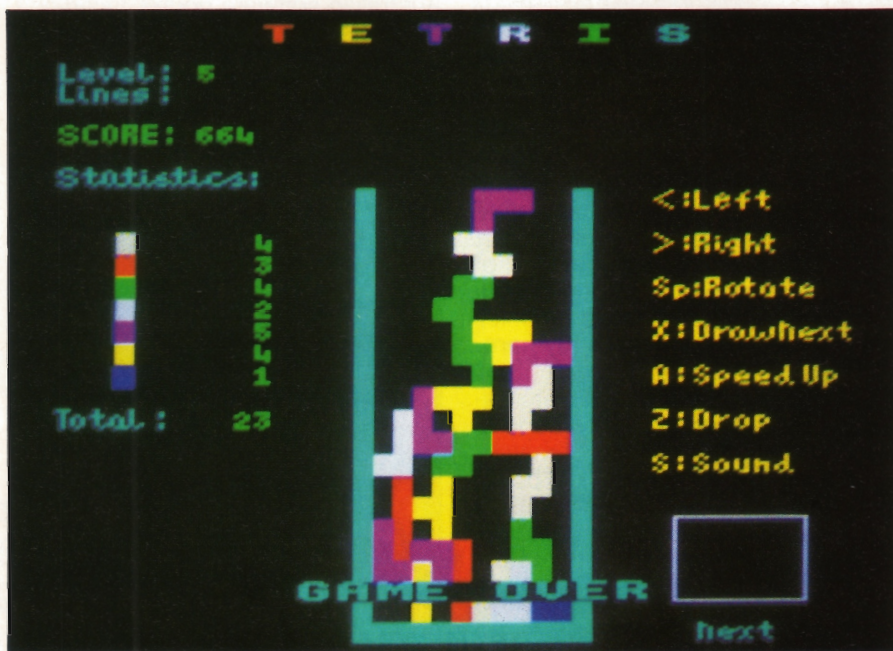
It seems simple enough at first, all you have to do is guide the slowly sinking shapes down to the bottom of the screen, and fit them together, without leaving any spaces. Every time a full line without any gaps is completed the whole lot sinks down, and you gain a little breathing space.

It **isn't** that simple, because the shapes are cunningly designed by some mad professor **not** to fit together without frantic use of the keyboard.

Tetris is a game that originated in Russia, and has been converted for a number of Western microcomputers, including the Commodore Amiga, and the BBC. You should therefore be warned that, as a conversion, it is not up to the standard of games such as Repton in terms of quality of programming. In fact it is positively spartan, there are no multi-coloured sprites, or scrolling backgrounds, and sound consists only of beeps.

Where the program does score heavily is in the gameplay, which is the most original I have seen in a long time. This game tests the player's spatial ability, and as such there is an intellectual aspect, uncommon in games, as patterns are built up, and shapes fit together in new ways. The program adopts an approach which encourages people to try higher skill levels, as every score is worth more points, as a compensation for the increase in speed.

The playing screen consists of three areas. To the left is the score together with a detailed breakdown of how it was achieved. In the centre of the screen is the actual playing area, consisting of a tall narrow rectangle. To the right of this there is a reminder of the keys used, and a view of the next shape to come down. That's it; very simple, totally addictive.



Skill and concentration required.



Lots to play for!

Indoor antics

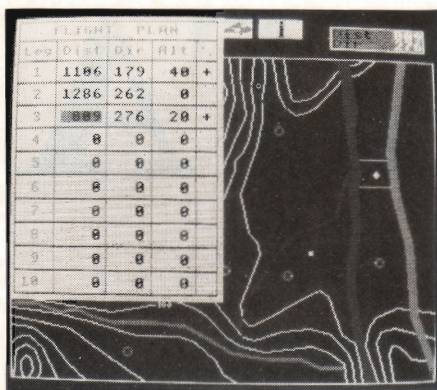
Thoughts turn to sporting matters as Summer beckons. Those who prefer games of the indoor kind can indulge in some energetic play with Tyne-soft's Indoor Games. This is one of the most graphically impressive BBC

games ever. From the loading screen (with the Mindscape credit) through the main menu and the four games themselves.

Ten pin bowling, darts, space football and table tennis are all represented on the menu screen. You just

press a key to highlight the required game. All four games offer computer opponent or two player versions.

Both darts and ten pin bowling are made interesting by each having two screens, one in which the bowl or throw is judged by the player,



Helicopter flight plan.

another to show the result. Because there are a number of elements that have to be got just right, the simple matter of bowling or throwing a dart becomes a complex combination of positioning, weight of bowl/throw and timing. The background graphics and animation add to the enjoyment.

Table tennis and space football are one screen games made interesting by fast movement, good scoring displays and the challenge of matching your opponent point by point, goal by goal. Table tennis offers some subtle bat controls while space football is simple and very quick. Although the action is too often

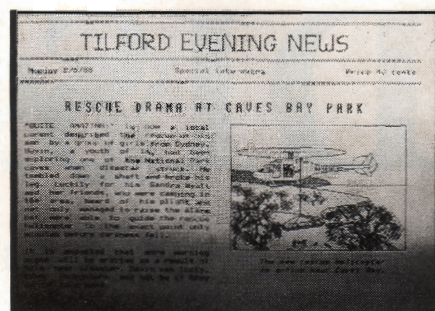
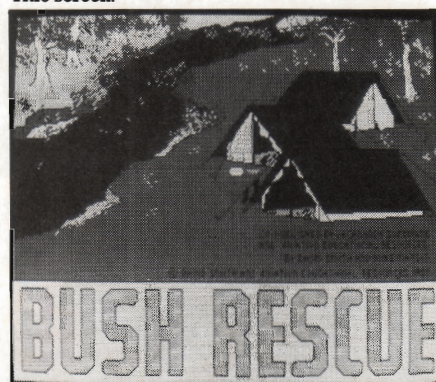
punctuated by the "football" getting stuck between the sides, this is still my favourite.

All told this is a "must have" for games players who prefer not to have to map and solve their way around a game, but rather to test their reactions and timing.

Down under

4Mation have co-operated with the Australian software house Jacaranda Software to produce Bush Rescue. It is an appropriate release in this bicentennial year down under. It's an adventure set in reality with the usual problems to solve.

Title screen.



Report writing.

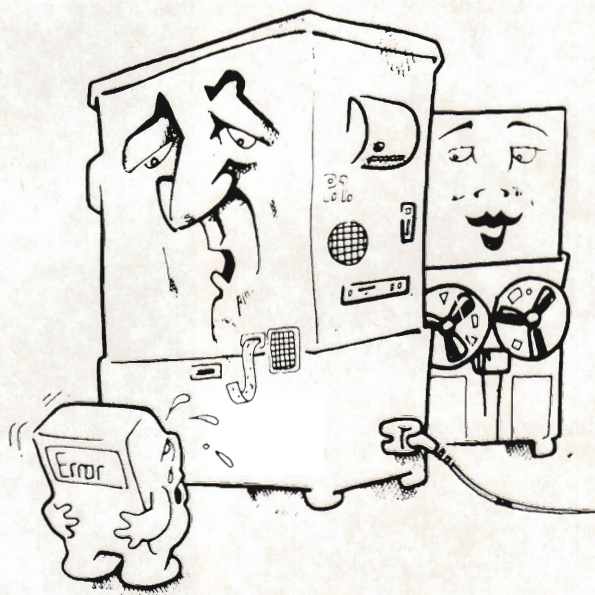
The development of the software is interesting in itself with the two designers, Mike Matson in England and David Cook in Australia, working together via electronic mail!

Children have to plan their trip, use maps and information services, plan a search, make a log bridge, practise flying the helicopter and make the rescue. They then have to plan, write, print and publish a report.

As well as the software, there is an excellent reference manual, checklists, timetables and maps, pictures and brochures for use in classroom projects. The usual high standard of release from 4Mation and recommended purchase for school use.

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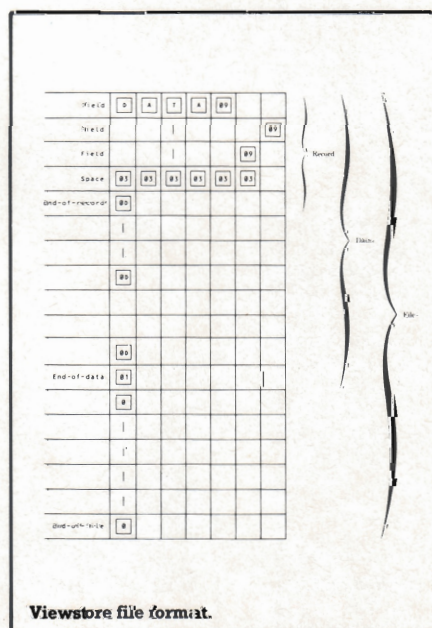
ABC BEGINNER'S GUIDE TO DISKS

Modern databases rely on disk power. But how do they interact with the filing system you know and love

Database files are merely long chains of characters, either numbers or text, or both. The filing system is used by the database program to find particular groups of characters within the file. Special characters are used by the database designer to distinguish between records and fields within the file. Figure One is an example (from the Viewstore manual courtesy of Acomsoft) and is the format used by the popular Acomsoft database Viewstore.

BASIC filing

Information in database files is accessed by operating system routines which have corresponding BASIC keywords. This area is one of the most obscure aspects of disk filing



from BASIC. Without going into too much detail it's worth reminding ourselves of the BASIC file commands available. The operating system routines which these commands use are the basis upon which all sorts of database programs are built.

To open a datafile from BASIC we can use one of three keywords, OPENIN, OPENOUT and OPENUP. OPENIN opens a file for reading, OPENOUT for writing, OPENUP for both reading and writing. There are parallels which ADFS users will recognise. They will be familiar with the attributes of W (write) and R (read) which appear after a file and can be given to a file with *ACCESS.

By reading, we mean taking data from a spot on the disk and placing it into a BASIC variable, either in the form of a number or a string of alphabetic characters. By writing we mean storing the values associated with

BASIC variables (memory locations) onto a known location on disk.

Here are some examples, showing the syntax required:

variable% = OPENOUT"FILENAME"
The following combination could form the basis of a universal routine to take a user's choice of drive, directory and filename and create a file.

```
drive$="0"
directory$="D"
file$="GUESTS"
channel%=OPENUP(drive$+"."
+directory$+"."+file$)
```

Data transfer

PRINT# and INPUT# are the keywords which transfer data as complete numbers, strings or variables, eg

```
PRINT#channel%,"Welcome to
Disk User",string$,44.4,number,
10,integer%
```

The different data types, string, floating point and integer numbers are stored in different numbers of bytes so it is up to the programmer to calculate how many bytes are being used by the data transfer into the disk file at the current value of PTR# (see below).

INPUT# is the equivalent command sucking data out of the file and into variables ready for use within a program eg
**INPUT#channel%,"welcome\$",
number,integer%**

PTR#, EXT# and EOF# return vital information about a file to the system. EXT# tells us the size of an open file, EOF# tests to see if the End Of File has been reached and PTR# holds a value (in bytes) which points to a particular byte in the file. The program now knows the exact spot to and from which data should be transferred. PTR# can either yield up its current value or can be **BPUT#channel%,ASC(initial\$)** the ASCII value of the character in initial\$ is transferred to the currently open file at the current value of PTR#.

Finally CLOSE#0 tidies up all open files, saving any data remaining in memory buffers and changing details, like file length, in the disk catalogue.

set from within a program eg

```
PRINT PTR#channel%
PTR#channel%=48
```

Once you know where you are in a file the next step is to transfer some data. A single byte can be read or written using BGET# and BPUT#, eg

byte% = BGET#channel%
the data is transferred from the currently open file, from the byte position held in PTR# into the variable byte%, and

And there we close another Beginners Guide, until next month's further delving into the operation of your disk system.

BASIC 1

Unfortunately there is confusion caused by the differences in effect between the OPENIN, OPENOUT and OPENUP keywords in BASIC 1 and BASIC 2. In BASIC 1 there is no OPENUP command but OPENIN produces the equivalent keyword code (and hence the same result).

Now that OPENUP has taken over the OPENIN keyword, you may wonder what has happened to the keyword code for OPENIN in BASIC 2. Well, it's changed and causes an error in BASIC 1 programs. So use OPENUP!

OPENOUT works in the same way in both versions.

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MOS Plus is a must for all Master 128 owners not least because it fixes those irritating bugs in the OS. But Plus means Plus and so the I (insert) option has been added to commands like *SRLOAD, *FORMAT, *VERIFY, *BACKUP included and the Master's alarm clock facility is fully supported. And there's more...

Do You Want to Know More?

Of course we can't tell you everything you need to know, so if you are a serious Beeb, Master or Archimedes user you really do need a copy of our comprehensive catalogue which can be ordered free of charge from the address below. But here's what Beebug magazine said about our products in their March 1988 issue:

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July issue – OUT JUNE 17 1988

Orcrest – arcade adventure with cute characters

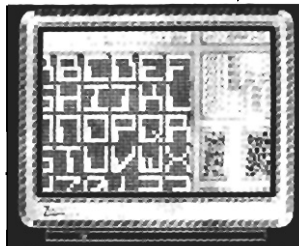
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SECTOR ZERO

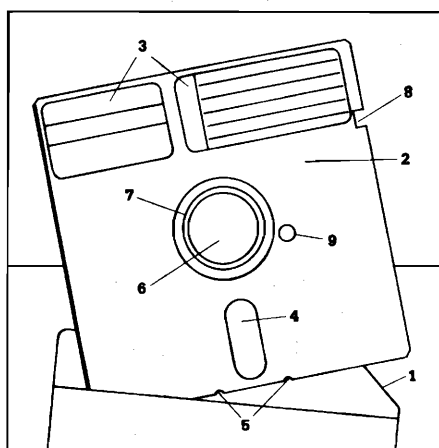
**WIN £25 with a "star routine"
plus Acorn trivia and
tips and tricks**

Anatomy of a disk

- 1. The storage envelope** protects the disk from scratches, dust, and fingerprints. Always store your disks in their storage envelopes.
- 2. The plastic cover** protects the disk (which is really a record-shaped disk of magnetic material) and allows it to spin smoothly. The cover is permanently sealed and contains lubricants and cleaning agents that prolong the life of the disk.
- 3. Labels** identify the manufacturer of the disk and publisher of any software on it. Blank labels should be used to keep track of your own data disks. Always insert the disk in your drive label side up, with the oval opening pointed toward the drive.
- 4. The oval opening** is where the disk drive head picks up and records information on the disk.
- 5. Alignment notches** align the disk over the disk drive head when the disk is inserted into the computer.
- 6. The central hole** is used by the disk drive to engage and rotate the disk.
- 7. Hub rings** can be glued to the rim of a disk's central hole to prevent wear on the magnetic surface.
- 8. The write-protect cutout** tells the disk drive whether the disk is "write protected" or not. If you cover the cutout with tape, the disk drive will not allow you to erase files or store new files on the disk.
- 9. The recording and reading head** is used by the disk drive to locate disk sectors where information is stored.

Acorn Trivia

1. Who is the current Managing Director of the company?
2. How many versions of the BBC Micro have there been altogether?
3. What does ASCII stand for?
4. If a BBC BASIC variable has a %



mark suffix, what kind is it? Why not send in your own favourite trivia questions and answers about your favourite micro?

Blobber and Blockade for the Electron

Thanks to Mr D.Ingleby-Oddy, one of our Electron owning brethren, who has written in with a couple of "fixes" for the games Blobber (Disk User 6) and Blockade (Disk User 4) so that they work on the Electron.

Blockade is straightforward, just enter:

LOAD "BLOCK" LIST 3350,3380

Then copy each line using the cursor and COPY keys, substituting the following values for the ones present after each **CMP**.

Line 3350, substitute 155

Line 3360, substitute 151

Line 3370, substitute 182

Line 3380, substitute 183

Now type:

SAVE "BLOCK"

Blobber took a bit more code so we have included a BBC to Electron covertor program on the disk this month for you to use in conjunction with your copy of *Blobber*. Just type:

CHAIN "BTOE"

or choose it from the menu. The con-

vertor also takes into account a bug in the original program. When the game is frozen and then resumed, (<DELETE> then <COPY>) the bonus timer on the right of the screen starts to increase instead of decrease. This can be overcome on the BBC version by entering the following:

***LOAD BLOB2 ?EFB=&F9**

***SAVE BLOB2 E00+2200**

Both games are available on their respective back issues (see SERVICES this issue).

Many thanks and a set of 10 Disk User data disks on their way to Mr Ingleby-Oddy. And just time to give a plug to your sound cartridge for the Electron. The cartridge upgrades the Electron's sound capabilities to that of the BBC and provides speech! It is available for £39.95 from M&S Associates, 40 Meyrick Drive, Newbury, Berkshire.

1. Harvey Coleman

2. Eight - Model A, B, B+, B+ 128, Master 128, Compact, Archimedes 305, 310

3. American Standard Code for Information Interchange

4. Integer

Reader's routines

In every issue we are going to include the best of the *reader's routines* you send in to us. There will be a £25 prize any we pick as the *star routine* of the month. There may not be a star routine every month because of space restrictions.

All other published routines will win 10 Disk User data disks for their authors. We are looking for short and sweet BASIC or machine code programs. So get writing and send your routines into Sector Zero, Disk User, 6C Belgic Square, Padholme Road, Peterborough, Cambridgeshire.

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How your disk drive works
Program transfer

Arkenoid/Thrust cheats
Ravenskull screen maps
Magic Wall puzzle
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Disk routine library
Overlay techniques
Spock's Logical disk menu
Toolkit character editor

Disk User Six:

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Psychebrot mandelbrots
Graphics from BASIC
Bobber arcade game
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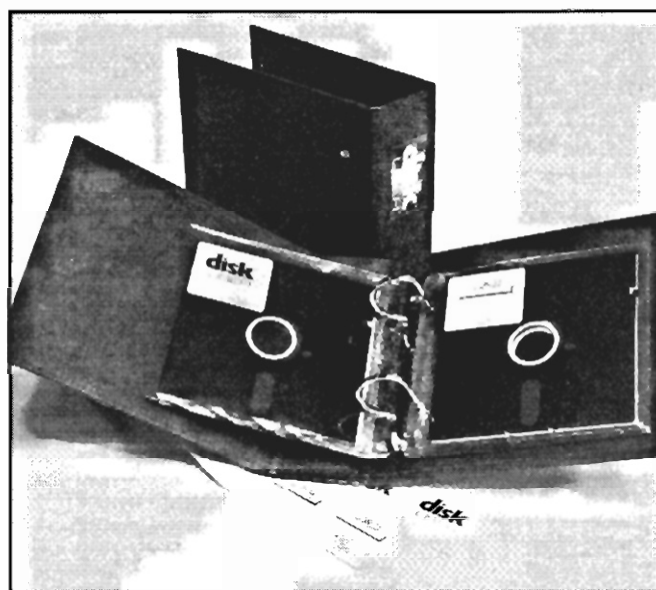
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Software manager – on Disk User 2



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Manufacturer	Model	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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The BBC Micro disk system comes into its own when paired with the latest database software

```
card = myoui
```

```
Manufacturer  
Model  
Type  
Pr.  
Extras  
Cap  
Boot  
Op  
Acc  
Mod
```

As the emphasis in the computer press moves away from the BBC Micro as a serious computer, we thought a look at the available database software might do our bit to steal the limelight now firmly on the sixteen bit computers.

It's all very different from the early programs, hampered as they were by cassette storage and memory residence. Disk and ROM applications have brought speed, storage up to 800K and beyond on floppy disks, sophisticated data manipulation, database programming languages, fast index searching and relational files. There's no need to go 16 bit if you don't want to.

Filing

Random access filing means that wherever a record is stored in a file, a pointer can indicate its position. The value of the pointer is rapidly calculated in memory which means that only some of the data needs to be held in memory, the rest remaining on disk. All the databases in Figure One have this ability.

By using indexes, the data need not be moved around in the file. The order of the data can remain the same while only the indexes – one assigned per field – are sorted. The ROM based programs in Figure One have indexing abilities. System Delta only allows one index at a time, which forms the basis of an *instant* search facility. Viewstore and Interbase allow multiple indexing.

A *relational* database program allows data within a single file to be common to different databases. System Delta provides a means of achieving this. It is a very important

feature, especially in System Delta application programs such as School Admin, where pupil data needs to be accessed in several ways.

Designer data

Disk based databases are controlled from a program in main memory or in a ROM/sideways RAM program in the machine. The memory resident programs use RAM which the ROM based programs use for record data or 80 column display modes. Thus the more sophisticated displays of Viewstore and Interbase.

Supastore is a further example of attractive and clear screen design. In its case, a ROM provides the machine code routines while memory resident modules work on the data. Supastore's system of menus makes it the most friendly of databases to use. It has been especially designed for use in schools. Its handling of subsets of a main file and the use of English language phrases (rather than computer jargon) on choice menus are further points to recommend it.

The designer of System Delta settled for a Mode 7 screen but it can contain a complete record card which can be scrolled around. System Delta is also an interesting departure from its predecessors, combining a set of fast ROM-based "star" routines with BASIC programs in memory. The ROM routines handle display, searching, sorting and random access. The BASIC program provides the structure. Thus you can program your own database and there are a number of customised databases (video rental, accounts etc) as well as a card index program.

Interbase is a database programming language with full facilities for creating your own custom database. It operates through the familiar territory of a BBC BASIC like language. Wordwise Plus owners will recognise the principal. The Interbase package also contains a standard card index program.

Output

The difference between disk based and ROM/disk based databases is also highlighted by the output stage. Disk based databases tend to offer printing of lists and labels only. Most allow the list to go to a file for use in a wordprocessor, where it can be formatted as required. The ROM/disk systems provide superior report formats and merging, although a disk database can always have extra utilities (as available with Clares Betabase) to extend the range of facilities. One important utility to watch out for if you have large lists in another database or wordprocessor is the *import* utility. Buying a database with a good import utility can save a lot of time.

DISK BASED
Acornsoft Database
Beebug Masterfile 2
Clares Betabase
ROM/DISK BASED
Computer Concepts
Interbase
Acornsoft
Viewstore
Minerva
System Delta
ESM Supastore

AUTOBASIC

**Learning about the outer edges of disk programming.
This month making BASIC programs
run from a * prompt**

It is often quite enough to be able to load and execute a piece of BASIC text with a command such as CHAIN "BASFILE". Sometimes however, this construction is too clumsy not to consider an alternative.

There are some (self included) who do not consider BASIC to be the ideal environment to be dropped into at every press of BREAK. Choosing to ignore the 'thou must lash, glue and rivet thy service entry language to socket 15' philosophy, BASIC happens to be queued 3rd in my machine. There is a sense of déjà vous when yet again PASCAL replies 'Get lost' to the request CHAIN "BASFILE".

What I want to be able to do is issue a *RUN BASFILE command and have my piece of BASIC text look after itself. As a bonus, this BASIC program will be available from any environment that supports OS commands. It also opens the way to writing utility software in BASIC while retaining the advantages of *RUN access.

The remainder of this article explains how it's done; the techniques and implementation of such a facility. The program AUTOBAS takes a BASIC source file and creates an object file which can be *RUN.

Power up

It is first necessary to understand how BASIC operates following its selection at power-up or after a *BASIC command. First it resets its internal variables, which include PAGE, TOP etc., it then asks the operating system to fetch a line of input. This request for input will be used by us to submit a startup command sequence to BASIC.

You may have noticed that following BREAK or the command *BASIC a program in memory will appear to be forgotten until BASIC is reminded of its existence (this is due to TOP being reset to PAGE + 2). Such jogs to the memory take the form of a command sequence which forces BASIC to readjust its pointers: PAGE = &1900 (for example) OLD RUN

Therefore booting the language via *BASIC will cripple its ability to recognise any program present. We must execute the command sequence above to announce the presence of a program. This is accomplished in many commercial programs by intercepting OSRDCH (the OS vector responsible for reading input characters) and substituting the next item in the command sequence each time BASIC requests input.

While this will work in the stand alone BBC, the necessary machine code is quite complex, not at all concise and as a bonus will not work at all across the TUBE due to non-vectored NVRDCH being employed by the TUBE system.

At this point it is worth noting that when the OS is requested to supply an input line it does not interrogate the keyboard directly but simply fetches the contents of the input buffer. This is because keyboard activity is continually placed there by the interrupt system. It therefore follows that any command sequence we wish BASIC to execute should be placed in the input buffer prior to its selection.

This can be accomplished by OSBYTE #&99 (write input buffer). Where X contains the buffer number (0 = keyboard, 1 = RS423) and Y the character to be inserted. Having done this all that remains is to boot BASIC by a call to OSCLI specifying *BASIC.

Automation

Unfortunately BASIC echoes all input to the screen. Since we do not want flashes of control text on screen we shall disable the VDU drivers, not forgetting to enable them later. The machine code section of AUTOBAS does all this.

Lines 260 - 320: Prompt for source file. Read catalogue information via OSFILE with A = &05. Place data at &70. On exit from OSFILE A = 0 if file not found. Otherwise !&72 = load address. !&76 = execute address. !&7A = length of file. If execute

address < &8000 then not a BASIC file.

Lines 340 - 590: Assemble machine code section using OPT 6. A single pass is sufficient as all labels are defined before use. Data for input buffer is BASIC tokenised. PAGE = &D0, RUN = &F9. Disable vdu drivers. Place data in input buffer via OSBYTE with A = &99. Boot BASIC via OSCLI.

Lines 630 - 690: Prompt for object file. Copy source file to object file and append machine code. Update catalogue information of object file via OSFILE with A = &01 to reflect new execution address.

The filing system sets the top 16 bits of a 32 bit address if the file operates this side of the TUBE. To ensure the execution address of the machine code patch is always on the same side as BASIC we strip the top 16 bits from the load and execution address.

The BASIC 2 facility to assemble to a dummy region of memory while being set up to execute at a different address is used. This is necessary as the length of the source file determines the execution address of the patch which might then compete with memory in which AUTOBAS currently resides making it impossible to assemble directly to execution space.

Remember that the machine code patch begins at TOP of object. Therefore any editing of object will destroy the patch which will then need recalculating anyway. AUTOBAS uses the source file load address to gauge the appropriate value of PAGE for the object (as this is where the file will be loaded automatically by *RUN). This means that it is possible for a BASIC program created with a TUBE system to have been saved with a load address of &0800. The resulting object file would then attempt to execute at &0800 whether or not the TUBE was attached. This could mean a system crash if attempted on a BBC machine where PAGE should not drop below &0E00.

Run AUTOBAS on itself to create a *RUN utility!

disk

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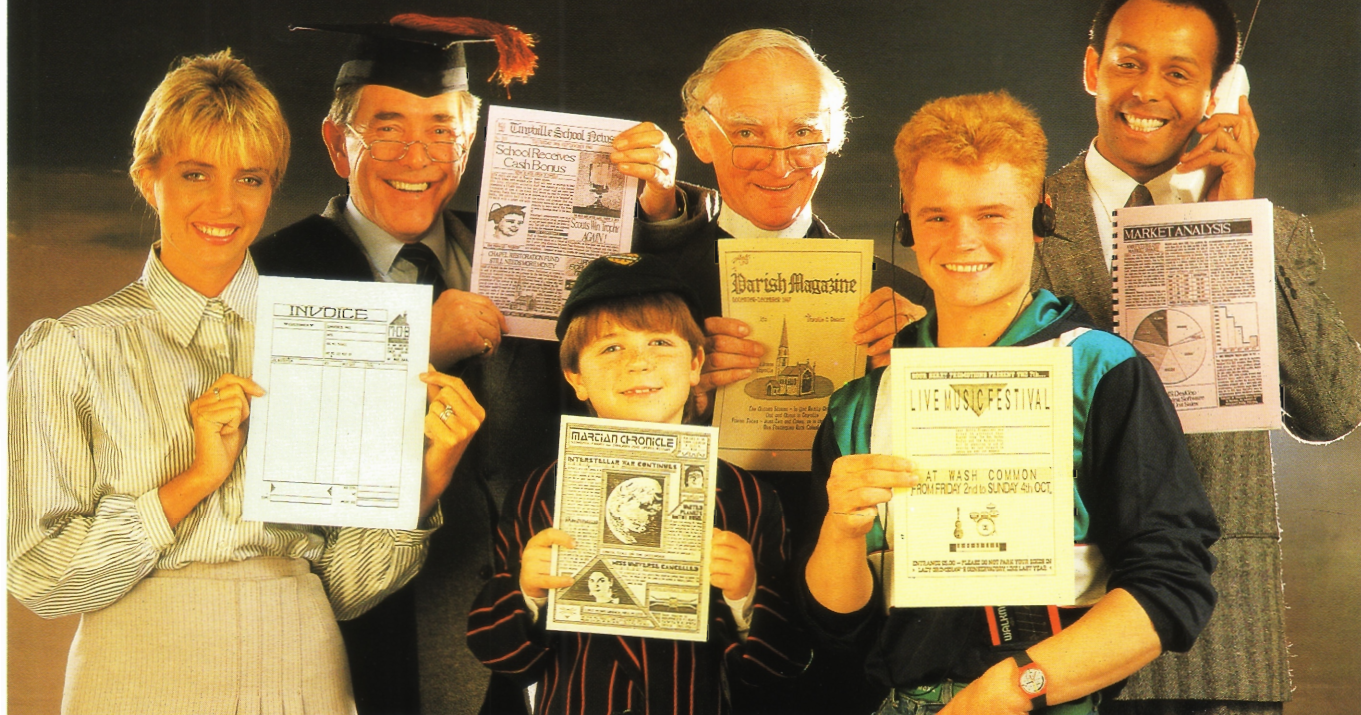
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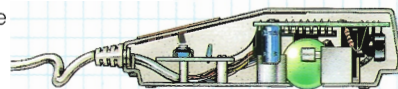
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